

AMERICAN

FEBRUARY • 1954

Cinematographer

THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY

THEATRE
TELEVISION
INDUSTRIAL
AMATEUR



In This Issue . . .

Photographing "Rear Window" . . . The New Arriflex Cameras
. . . Disney's Naturalist-Cinematographers . . . Magnetic Sound
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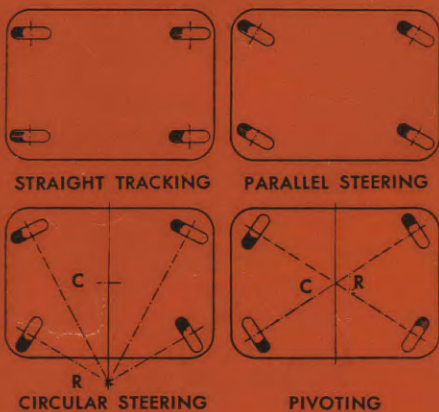
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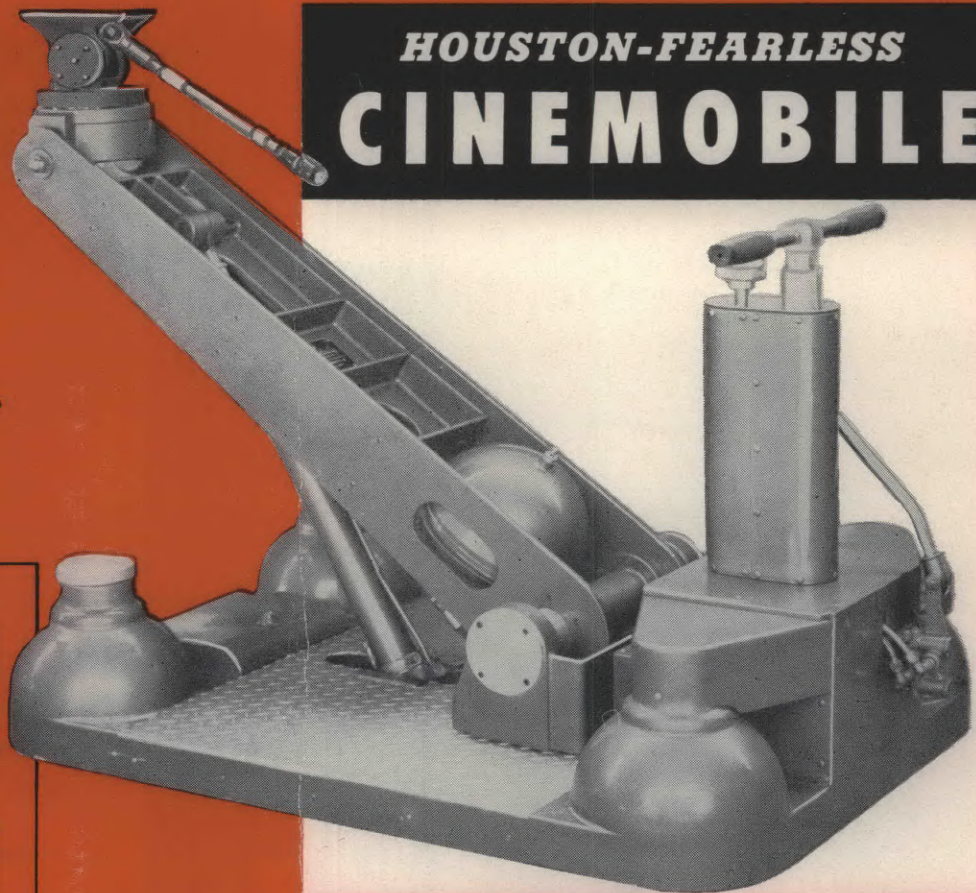
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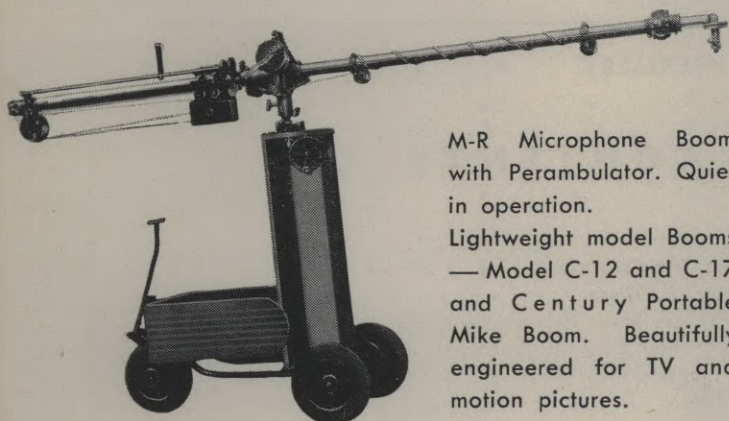
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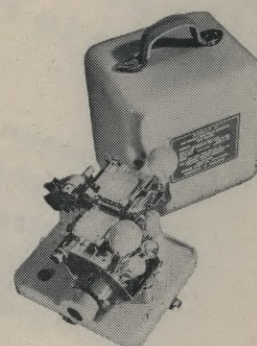
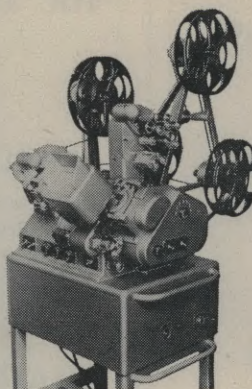
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M-R Microphone Boom with Perambulator. Quiet in operation.

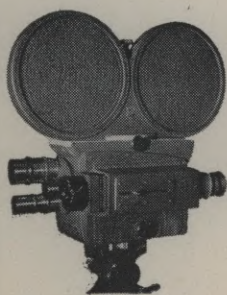
Lightweight model Booms — Model C-12 and C-17 and Century Portable Mike Boom. Beautifully engineered for TV and motion pictures.

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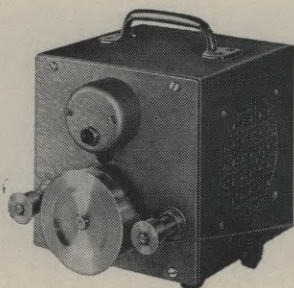
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AURICON CAMERAS

Illustrated: Cinevoice with 3-lens turret, Zoom Finder and 400 ft. Magazine.

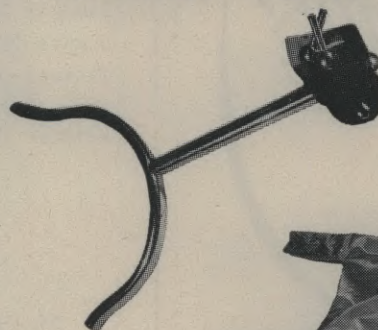


PRECISION SOUND READER

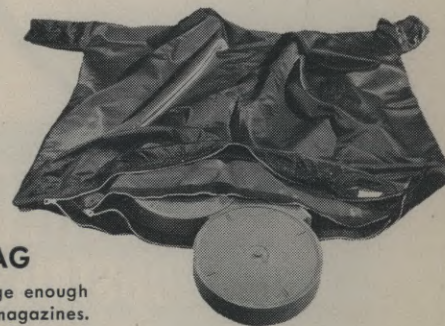
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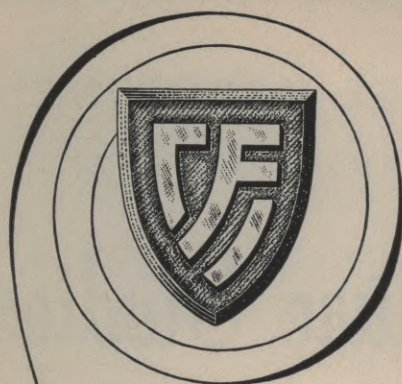
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AMERICAN

Cinematographer

THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY
PUBLICATION OF THE AMERICAN SOCIETY OF CINEMATOGRAPHERS

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ON THE COVER

ONE OF THE MOST interesting of photographic assignments was undertaken by director of photography Robert Burks, ASC, last month when he began filming "Rear Window," his fourth production for Alfred Hitchcock, at Paramount Studios. Here, Burks (right) has lined up his camera on action taking place in an apartment across courtyard, as observed by Jimmy Stewart seated in rear window of his Greenwich Village apartment. Director Hitchcock (left) uses P-A system to direct players in distant set. Story about the photography begins on page 76 in this issue.—Photo by Glen E. Richardson.

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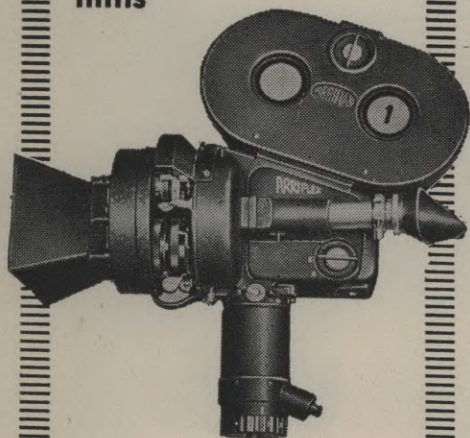
85% of the professional motion pictures shown throughout the world are filmed with a Mitchell

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For tough and trying assignments, ARRIFLEX 35 is in a class by itself. Reflex focusing through photographing lens while camera is operating—this is just one outstanding ARRIFLEX feature.

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INDUSTRY NEWS

In all the big changes which have been wrought in the production of motion pictures in recent months, photography has been a dominant factor. The introduction of 3-D, CinemaScope, and the various wide-screen formats all began with camera and/or lens modifications; all involved some change in photographic procedure.

While the resultant upheaval in studio programs temporarily displaced some cinematographers and camera crews, most of the displaced have found interesting new employment in the bustling, ever-growing TV film industry.

Hal Roach, Jr., in a recent address before members of the American Society of Cinematographers, in Hollywood, hinted at plentiful assignments in TV film making yet to come.

Last month, the Roach Studio in Culver City, revealed that over 3,500,000 feet of negative was exposed in 250 telepix produced at that studio during 1953.

The studio, which has a capacity for turning out 400 TV pictures per year, anticipates greatly increased activity there during 1954.

There's a lot of business in store for film manufacturers the next 10 months—just in the TV film production field.

Most of the major studios already are shifting into high gear, production-wise. Those that shut down or approached that status last year, did so only to get their bearings during the "confusion in formats" period. Now, with few if any studios worrying about the importance of 3-D, with most all settled in their minds as to which wide-screen formats to follow, the production train is surely but cautiously being accelerated again.

One thing is certain: there won't be as many feature films made during 1954. But those that will, will be made with care; with bigger budgets; with more film; and in most cases with greater casts and personnel.

Color in feature pictures, which has shown a steady increase in the past twelve months, is expected to take an even greater jump this year. Almost two-thirds of the major studios will shoot their feature productions in Technicolor, Eastman color negative, or Ansco Color. Production of short subjects in CinemaScope and color will in-

crease color film use over that of last year.

Production of TV spot commercials last year showed an increase of about 20% over 1952, according to "The TV Reporter," industry trade paper, with the upward trend continuing. Though there are over 80 companies currently engaged in this field on west coast, as compared to about 50 in New York area, the eastern output is heavier. Budgets for "spots" vary widely from \$600 to \$10,000.

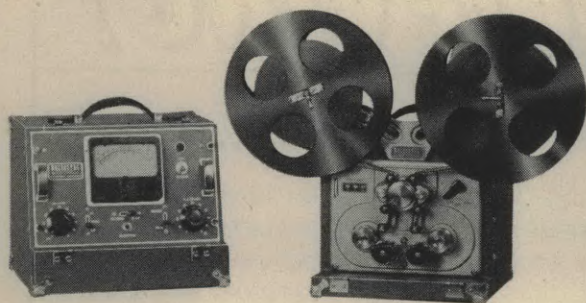
Said to be one of the most consistently active producers of TV commercials is the Universal-International Pictures' subsidiary, United-World Pictures. Using U-I's studio facilities, company has turned out more than 300 TV commercials ranging in length from 20 seconds to five minutes.

Crawley Films Limited, of Ottawa, Canada's largest private producer of motion pictures, for the 15th consecutive year reports an upswing in business. Gross business in 1953 was up 22% over 1952. A total of 52 major productions were completed. In addition, 100 smaller assignments were handled. The company, incidentally, received eight new film citations during the year, bringing the total to 35 awards received in five years.

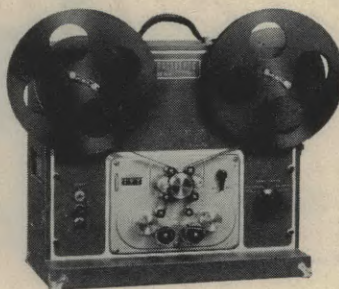
A course in TV advertising is being offered by the University of California Extension, in Los Angeles, for the first time. Evening classes will start February 15th at 7 p.m. in a Royce Hall classroom. The courses will deal with the economics and effectiveness of TV film commercials and will include laboratory work in writing film and live-commercial copy. Course will extend over period of eight weeks.

Following a filming recess, to begin about mid-February, when all productions for its 1954-54 releasing season are completed, Metro-Goldwyn-Mayer will launch its 1954-55 releasing season with eight big pictures to start shooting in April and May. More than 22 writers are currently at work on scripts for those and other MGM productions scheduled to go before the cameras this year.

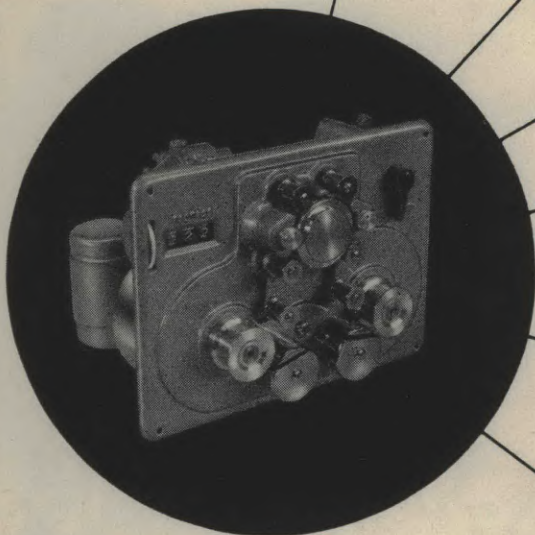
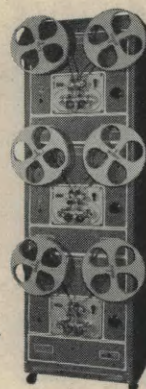
MODEL SW-602
PORTABLE RECORDING SYSTEM



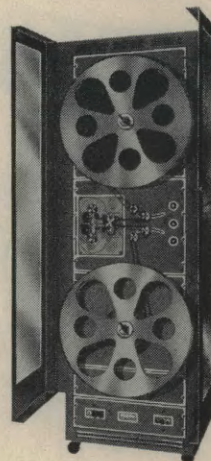
MODEL SW-602-RP
RACK-MOUNT RECORDER
IN PORTABLE CASE



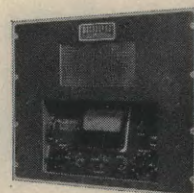
MODEL SW-602-D3
THREE INTERLOCKED DUMMIES
WITH PLAYBACK PRE-AMPLIFIERS



MODEL SW-335
35mm STEREOGRAPHIC
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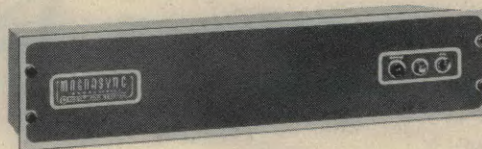
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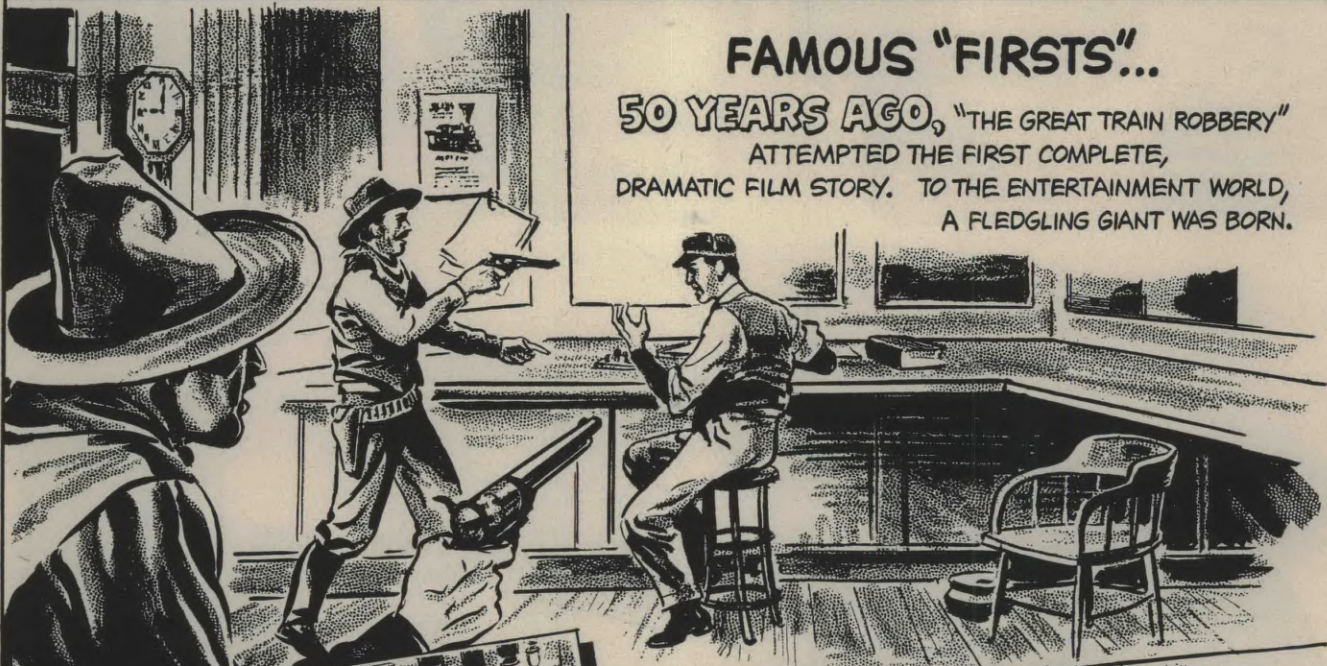
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16 MM SOUND-ON-FILM CAMERA

Auricon "Super 1200"

with new Model "CM-74A" features . . .

- ★ During picture exposure, your film runs through the New Auricon "Super 1200" Film-Gate with the light-sensitive film emulsion accurately positioned on jewel-hard Sapphire surfaces, an exclusive Berndt-Bach feature (U.S. Patent No. 2,506,765). This polished Sapphire Film-Gate is guaranteed frictionless and wear-proof for in-focus and scratch-free pictures, regardless of how much film you run through the camera!
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- ★ Two independent Finder systems (in addition to Reflex Ground-Glass Focussing through the Camera lens); a brilliant upright-image Studio Finder, plus a "Rifle-Scope" precision-matched Telephoto Finder.
- ★ Records "rock-steady" picture and High Fidelity Optical Sound-Track on same film at same time, with "whisper-quiet" Camera & Sound Mechanism synchronously driven by precision-machined Nylon gears.
- ★ 400 and 1200 ft. film Magazines available. Up to 33 minutes continuous filming.
- ★ "Super 1200" is self-Blimped for completely quiet studio use.
- ★ Now priced from \$4,652.15 complete for sound-on-film; \$3,755.65 without sound; choice of "C" Mount lenses and Carrying Cases extra.
- ★ Sold with a 30 day money-back Guarantee and One Year Service Guarantee; you must be satisfied. Write today for your free Auricon Catalog...

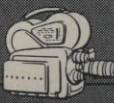
Shown here is a cutaway view of the "Super 1200" Optical System for Reflex Ground-Glass Focussing through the Camera lens. Also provided are two other finder systems, a telephoto-lens "Rifle-Scope" Finder synchronized with the Camera Turret, and a brilliant upright-image Studio Finder.

Dove-Tail Optical Carriage is only moving part of "Super 1200" Optical System. There is no camera-weight shift on tripod when moving from focus to film-shooting position.

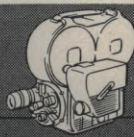
"Super 1200" Camera casing, film gate and shooting lenses are solidly precision-mounted with relation to each other, and do not shift to focus or shoot.

BERNDT-BACH, INC.
7381 Beverly Blvd., Los Angeles 36, Calif.

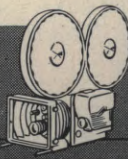
The **Auricon Hollywood** Line



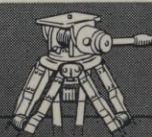
CINE-VOICE



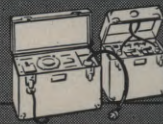
AURICON-PRO



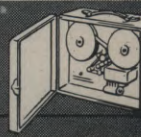
SUPER 1200



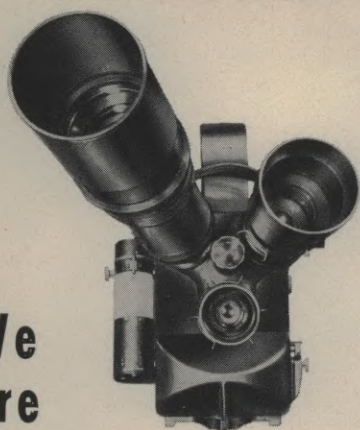
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PORTABLE POWER UNIT



SOUND RECORDER



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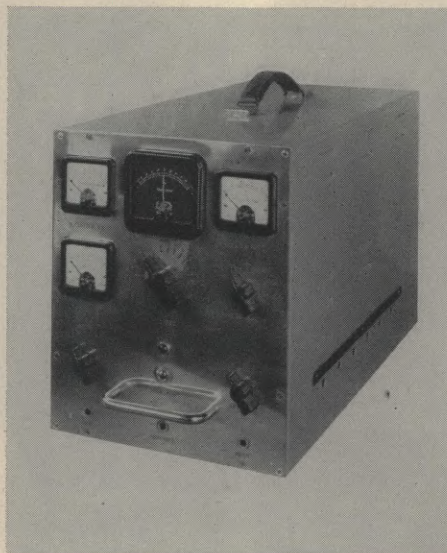
We look forward to serving you.

FRANK C. ZUCKER
CAMERA EQUIPMENT CO.
1600 BROADWAY NEW YORK

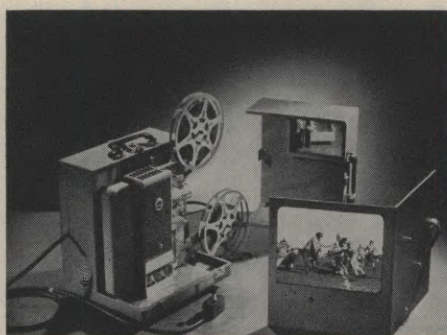
WHAT'S NEW

in equipment, accessories and service

Flutter Meter—S.O.S. Cinema Supply Corp., 602 W. 52nd St., New York City, N. Y. has been appointed U. S. distributor of the Gaumont-Kalee flutter meter, an electronic device for measuring small frequency variations of a



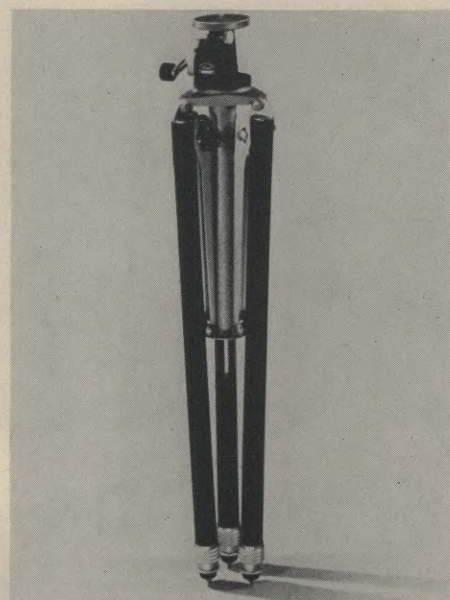
given carrier frequency in the recording or reproduction of sound. Instrument operates at normal c.f. of 3000 cycles per second. The meter consists of a narrow-band amplifier, a limiter, a discriminator and detector, and a metering system. The whole unit is self contained. More complete details may be had by writing S.O.S. and mentioning *American Cinematographer*.



Kodascope Analyst Projector—Eastman Kodak Co., Rochester, N. Y., announces a new 16mm film projector specifically designed for analytical study of films. Featuring a constant-speed motor for the blower cooling system, and a two-speed governor-controlled motor for the film moving mechanism, projector has a reversing switch which enables operator to stop and back up, then re-run

film for close study. No darkened room is required for projection. Image is thrown on a translucent screen which is part of the carrying case. Film capacity is 400 ft. Price of unit is \$295.00.

Mobile Camera Units—Comprehensive brochures illustrating and describing the various types of camera cranes, dollies, and camera pedestals, as well as film processing equipment, offered by the Houston-Fearless Corporation, are now available to responsible persons in the film industry by writing the manufacturer at 11809 West Olympic Blvd., Los Angeles 64, Calif., and mentioning *American Cinematographer*.



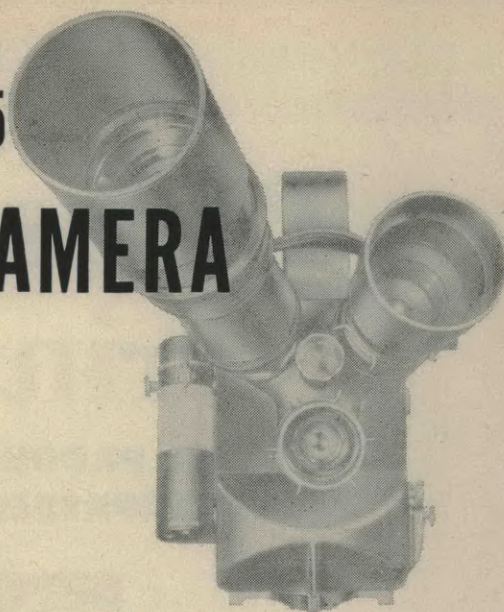
DeLuxe Studio Tripod—Kling Photo Corp., 235 Fourth Ave., New York 3, N. Y., announces the new Linhof deLuxe Studio Tripod for light-weight motion picture cameras. Employing a new type of tripod construction, the tripod is available in a choice of two- or three-section models affording camera positions from floor level up to 60 and 73 inches respectively. Tripod folds to a minimum length of 30"; weighs 61½ lbs. The 60" model is priced at \$69.95; the 73", \$79.95.

New Westrex Recording Equipment—Westrex Corp., 111 Eighth Ave., New York 11, N. Y., announces its new

(Continued On Page 68)

CAMERETTE 35 & 16/35

THE MOST VERSATILE CAMERA IN THE WORLD



BENJAMIN BERG

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Customers located east of the Mississippi River will find complete Camerette sales, service and supply facilities, assuring rapid and convenient attention to their needs.

The Camerette represents the greatest advance in motion picture camera design in the past decade . . . Reflex Viewing, seeing through the taking lens at all times . . . The more critical requirements of the new techniques for accurate framing and focusing DEMAND this modern motion picture camera.

Precise, rugged movement . . . Divergent 3 lens turret . . . 200 degree adjustable shutter . . . Automatic film gate . . . 400' and 200' magazines . . . Light weight, only 14 pounds with 3 lenses, 400' magazine and 6/8 volt motor.

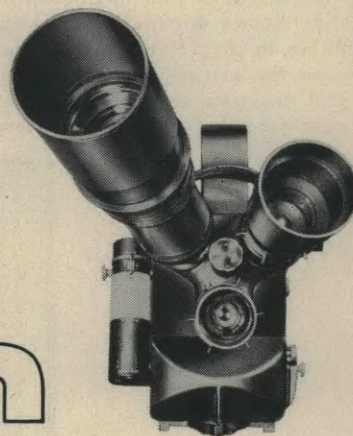
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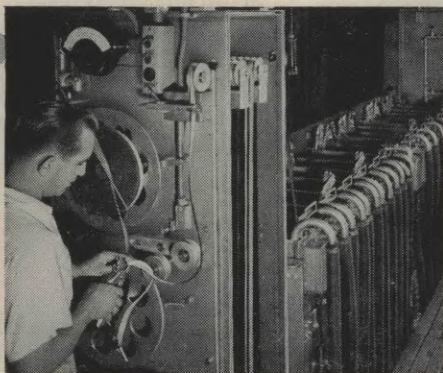
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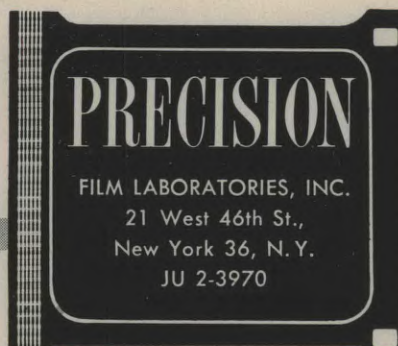
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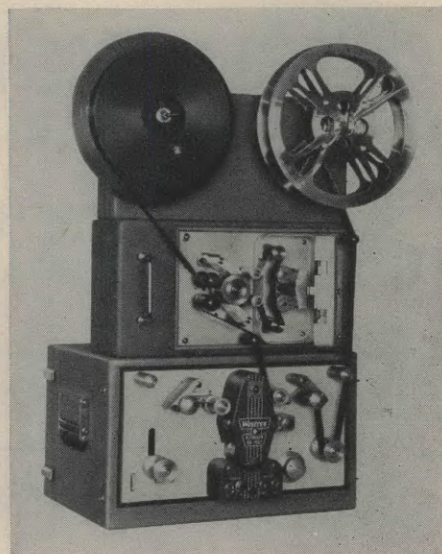
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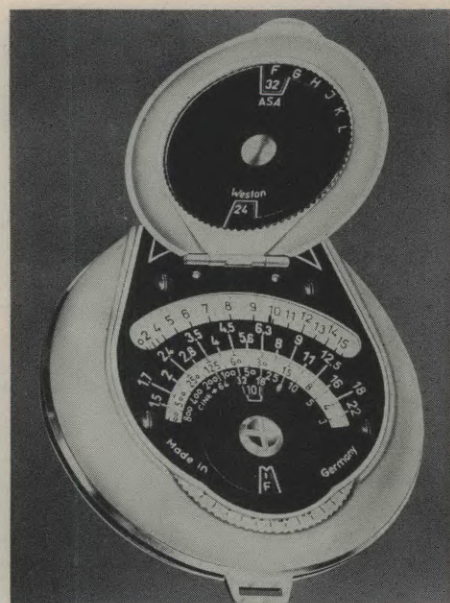
WHAT'S NEW

(Continued from Page 66)

"Penthouse" stereophonic modification unit for its 1035 single-track magnetic recording system. New unit adds the facility for recording and monitoring of three or four magnetic tracks to the basic single magnetic track RA-1467A Westrex recorder. The new unit is



mounted between the recorder and the reel assembly, as illustrated, and contains a film-driven filter and the magnetic heads. Complete technical data and price may be had by writing the manufacturer and mentioning *American Cinematographer*.



Bertram Exposure Meter—Willoughby's, 110 W. 32nd St., New York 1, N. Y., announce a new model Bertram exposure meter which features a new type,

(Continued on Page 109)

Great equipment makes great cameramen

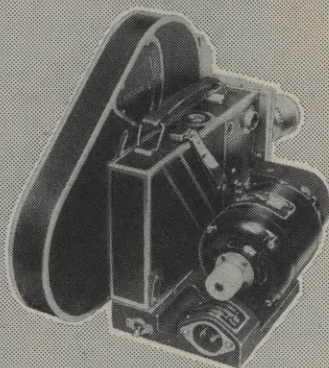
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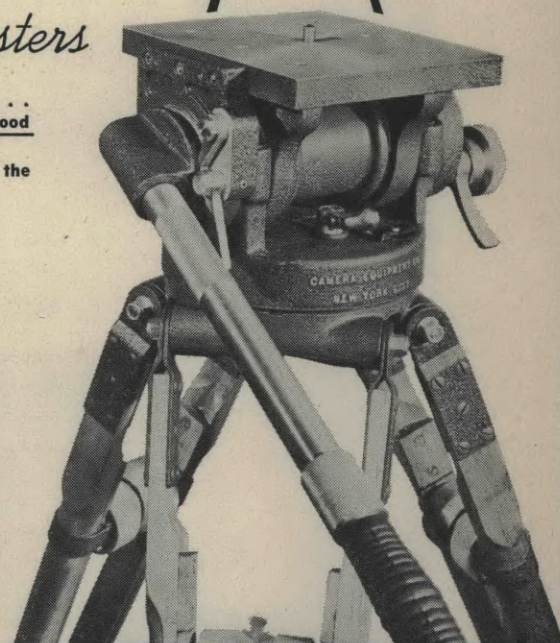
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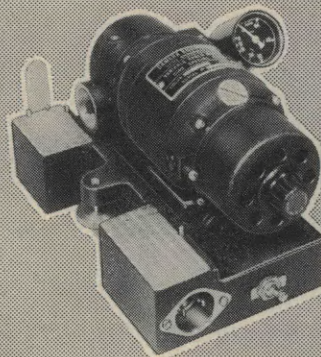
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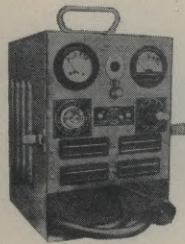
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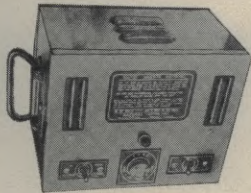
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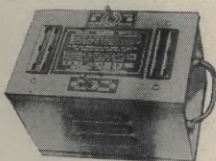
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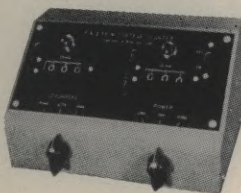
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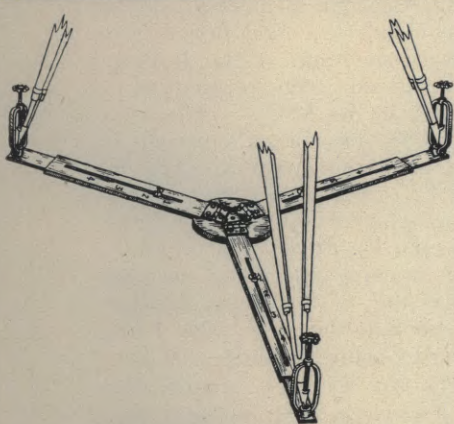


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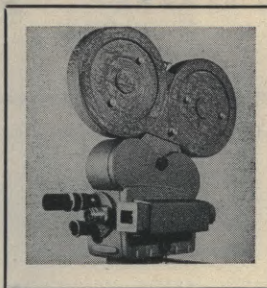
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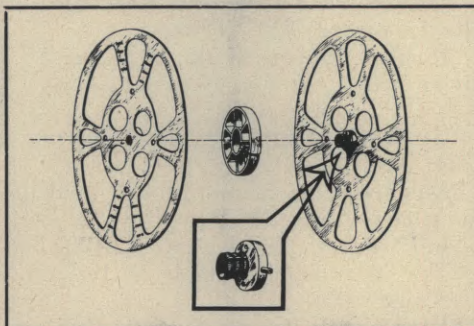


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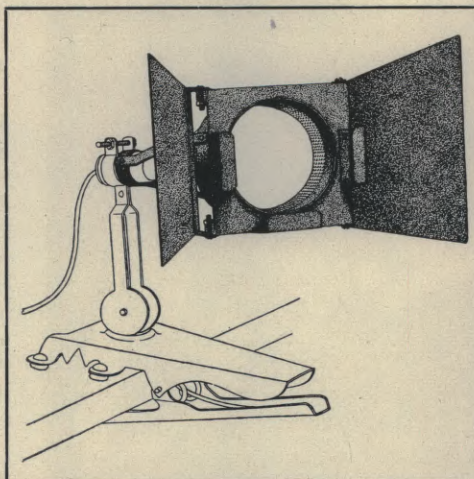
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NOW — you can project 16mm film on cores without rewinding. Simply open split reel, slip film in and close reel.

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Hollywood Bulletin Board



ONE OF "Filmdom's Famous Five" is Leon Shamroy, ASC, (L) who was recently awarded the Film Daily Award as best cinematographer of 1953 for his outstanding camera work on "The Robe." Fox's camera department head Sol Halprin, ASC, holds Cinemascope lens like one Shamroy used for shooting the picture.

Academy Awards for the best cinematography of 1953 came a step nearer reality last month. The directors of photography of the Hollywood motion picture studios, in a preliminary balloting, selected ten black-and-white and ten color productions of 1953 as candidate entries for nominations for Academy photographic achievement awards.

Nomination ballots were subsequently mailed to all directors of photography. Latter will vote to select, from among the preliminary 20 productions, five films in each class as the 1953 Awards nominees. The balloting closed on February 6th, and results will be announced publicly on February 15th.

The twenty candidate films and the names of the directors of photography who filmed them follow:

BLACK-AND-WHITE PRODUCTIONS

"The Cruel Sea," Gordon Dines, FRPS, (Rank-U-I).

"The Desert Rats," Lucien Ballard, ASC, (Fox).

"The Four Poster," Hal Mohr, ASC, (Kramer-Col.).

"From Here to Eternity," Burnett Guffey, ASC, (Col.).

"Island in the Sky," Archie Stout, ASC, (Warners).

"Julius Caesar," Joseph Ruttenberg, ASC, (MGM).

"The Little World of Don Camillo," Nicholas Hayer, (I.F.E. Releasing Corp., Italy).

"Martin Luther," Joseph Brun, ASC, (L. deRochemont).

"Roman Holiday," Frank Planer, ASC, and Henri Alekan, (Para.).

"So Big," Ellsworth Fredericks, (Warners).

COLOR PRODUCTIONS

"All the Brothers Were Valiant," George Folsey, ASC, (MGM).

"Beneath the Twelve Mile Reef," Joseph Cronjager, ASC, (Fox).

"Hondo," Robert Burks, ASC, and Archie Stout, ASC, (Wayne-Fellows-W.B.).

"Gentlemen Prefer Blondes," Harry Wild, ASC, (Fox).

"Knights of the Round Table," Freddie Young, ASC, (MGM).

"Lili," Robert Planck, ASC, (MGM).

"The Mississippi Gambler," Irving Glassberg, ASC, (U-I).

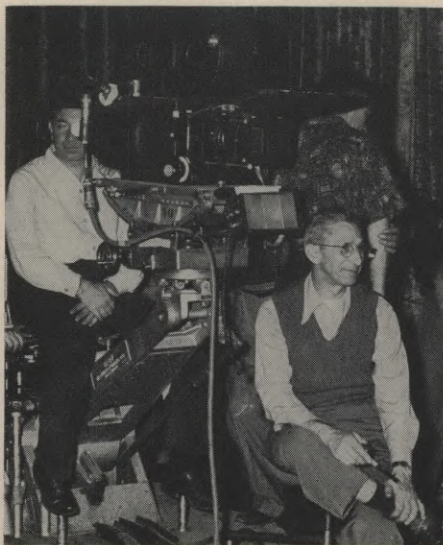
"Mogambo," Robert Surtees, ASC, and Freddie Young, ASC, (MGM).

"The Robe," Leon Shamroy, ASC, (Fox).

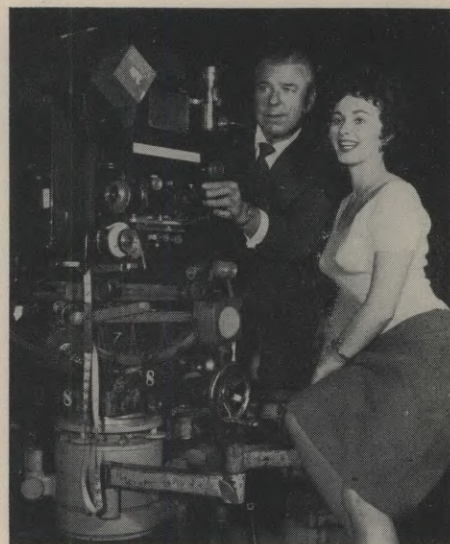
"Shane," Loyal Griggs, ASC, (Para.).

The five films nominated in each classification will be announced here next month.

In the meantime, the Academy of



BENJAMIN KLINE, ASC, (R) last month started his sixth consecutive year as director of photography for Frank Wisbar, TV film producer of the popular "Fireside Theatre" series of half-hour dramas.



LOYAL GRIGGS, ASC, shows Marla English, new Paramount starlet, some of the fine points about a cameraman's job. Miss English will be crowned "Miss PSA Movie Queen of 1954" at forthcoming Second Annual Town Meeting of Motion Picture Photography, March 27-28, in Hollywood.

Motion Picture Arts and Sciences is proceeding with plans to hold its "Oscar" presentation ceremonies at the Hollywood Pantages Theatre the evening of March 25th.

BRIEFLY—Donald E. Hyndman, sales-manager of Eastman Kodak motion picture film department, Rochester, was elected to Associate Membership in the ASC last month . . . Sam Leavitt, who just finished shooting "A Star Is Born" at Warners, has been re-admitted to membership in the ASC . . . Edward J. Snyder, ASC, has been re-pacted by 20th-Fox for another year . . . Ted McCord, ASC, is in Puerto Rico on a new picture assignment for Warner Brothers . . . John W. Boyle, ASC secretary, has been appointed to Program Committee of the forthcoming Academy Awards presentations . . . Art Arling, ASC, goes to Columbia along with Betty Grable, to film her new picture there . . . Gil Warrenton, ASC, on leave from Revue (TV) Productions, is in Mexico shooting a feature for Cosmo Productions . . . Omitted last month from "Box Score" pages were following credits: Stanley Cortez, ASC, "Diamond Queen"; Bob Burks, ASC, "Hondo," (with Archie Stout).

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COLLAPSIBLE 3-WHEEL DOLLY



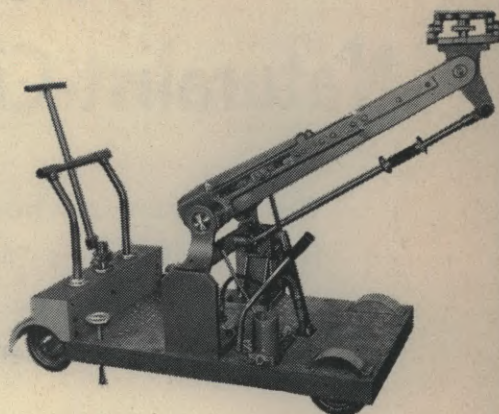
For studio or location. Folds into one compact unit. Can be used with professional or semi-professional tripods.

For motion picture and TV cameras. Sturdy cast aluminum. For standard or baby tripods. Additional baby tripod point holders to control spread of tripod legs. Adjustable spring seat. Extra wide rubber wheels. Bronze tie down clamps and other features.

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CAMERA DOLLY

The advanced dolly for instant moveability — streamlined, lightweight, exceptionally sturdy. Nothing to get out of order. Many new advantages for easy operation. Hydraulic lift type for fast upward and downward motion of TV and motion picture cameras.



Swivel seat. Adjustable leveling head. Seat for assistant. In-line wheels for track use. Steering wheel, rigid floor locks. Hand pump or combination hand and motor pump. Easily transported in a station wagon. Fits through a 28" door.

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COMPLETE LINE OF: 16mm, 35mm
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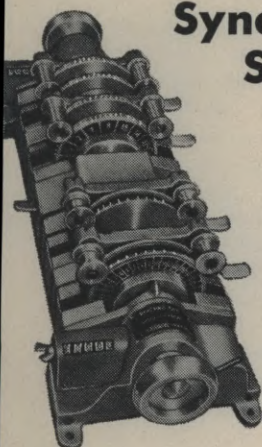
BELL & HOWELL: Standard, Eye-
mos, Filmos. MITCHELL: Standard,
Hi-speed, BNC, NC, 16mm.

SEND FOR CATALOGUE

Synchro-film-ed Synchronizer

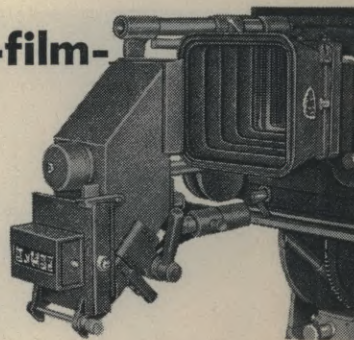
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Pays for itself in
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savings on the
set. A New De-
velopment! Elim-
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For Studio or on Location. Light-
weight — collapsible — for TV and
motion picture production. Sturdy
construction. Boom telescopes 7 to
17 ft. Rear handle for directional
mike control. A remote control per-
mits 360° rotation of the microphone.
Operator can push the boom and oper-
ate microphone swivel simultaneously. Extension rods make it
simple to operate microphone rotation from floor. Microphone
cable hangs outside of boom, preventing cable from tangling
with the rotation mechanism. Ball bearing casters, rigid foot
locks, pneumatic drop check for lowering the boom, etc.



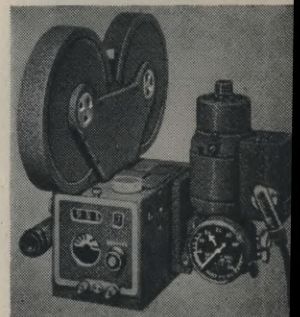
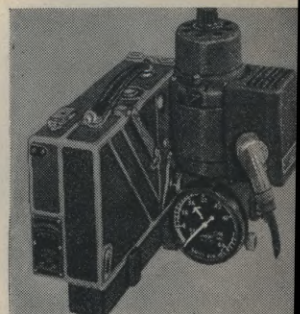
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Separate Base for Cine Special.
Variable Speed 8-64 frames.
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ANIMATION MOTORS: Cine Spe-
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Walt Disney's Naturalist-Cinematographers

The cameramen who gather the interesting footage for Walt Disney's "True-Life Adventures" are essentially naturalists or scientists who made the motion picture camera a vital tool in their studies.

By FREDERICK FOSTER



STUART JEWELL and his telephoto-mounted Cine Special camera filming wild bee life for a coming Disney "True-Life Adventure" film.

MAKING POSSIBLE the "True-Life Adventure" series of films which Walt Disney has been turning out the past few years are a new breed of motion picture cameramen.

All are essentially naturalists, scientists or folk authorities first, and cameramen by accident. That is, it was their zeal for recording as well as observing the facts of life as uncovered in their scientific probings that led most of them to taking up cinematography as the recording medium.

Their ability as cinematographers is attested in the wealth of rare and unusual 16mm color film they have contributed to such Disney subjects as "Seal Island" (1948), "Beaver Valley" (1950), "Nature's Half Acre" (1951), "Water Birds" (1952), and to his most recent, "The Living Desert," currently in release.

"The Living Desert" marks the first of the "True Life Adventures" to be presented in the newer 60 to 70 minute format—twice the length of previous releases.

"The 'True Life Adventures' have been logically expanded," says Walt Disney, "because the volume of fine material coming in from our collaborative naturalist-photographers could no longer be cramped into the original format."

In "The Living Desert," there is unreel the most exciting drama of wild-life and primitive passions ever brought to the screen. It goes far down the ladder of existence for its theme. Here, against the majestic background of the Great American Desert, are seen the animals, birds, reptiles and bizarre insects which have learned to exist and thrive in the hardest of all environ-

CAMERAMAN Bob Crandall (L) and Paul Kenworthy filmed the thrilling scenes of a bobcat treed by a family of sturdy pecaries, which highlight "Living Desert."

Hitchcock's latest mystery drama is told through the eyes of one man, with the camera shooting from one and the same point of view in his apartment — the

REAR WINDOW

By ARTHUR E. GAVIN

THE PHOTOGRAPHY of "Rear Window," Alfred Hitchcock's latest production, tops anything ever attempted in his previous pictures, every one of which involved some new or unusual photographic innovation. For director of photography Robert Burks, ASC, "Rear Window" was perhaps the toughest assignment of his career, although he wouldn't exactly put it that way. He'd say it was "the most challenging."

"Rear Window," completed last month at Paramount Studios, was shot in its entirety on one sound stage and in one set—but a set of which Hollywood has never before seen the like.

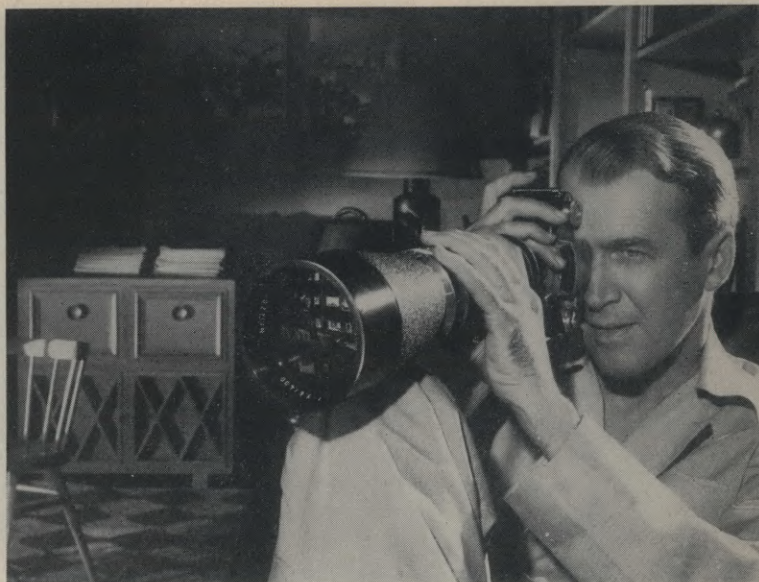
The story, which stars James Stewart, Grace Kelly and Wendell Corey, is one of the tightest suspense stories ever written. It has Stewart cast as a photographer for a national picture magazine who is confined to a wheel-chair with a broken leg suffered in his last assignment. Throughout the entire picture he remains grounded to his wheel-chair, which is placed in the rear window of his Greenwich Village apartment. From this vantage point, and with little else to do, he gazes idly at the apartments and their occupants opposite and to both sides of him.

After a few days, he has reason to believe that one of the apartment dwellers has murdered his wife, sliced up her body, and disposed of it in a flower bed in the courtyard below. At this point, Stewart uses binoculars to study the suspect at closer range, and later he scans the scene even more minutely through the telephoto lens attached to his reflex-type camera.

Although evidence he gathers points to a correct summation on his part, it is up to him to prove his case to his fiancee, Grace Kelly; his war-time buddy, now a detective, portrayed by Wendell Corey; and to his nurse, Thelma Ritter. As the story progresses, occupants of the 31 apartments within his vantage point continue their various ways of life. But Stewart's chief interest is in the activities of Raymond Burr, who plays the part of the salesman-murderer, and he eventually brings about his arrest.

(Continued on Next Page)

HOW some of the action in apartments across courtyard from Stewart's window was filmed. With 6-inch telephoto on camera mounted on boom, scene is recorded as viewed from window by Stewart. Director Alfred Hitchcock (left foreground) looks on as action is being filmed by camera crew.

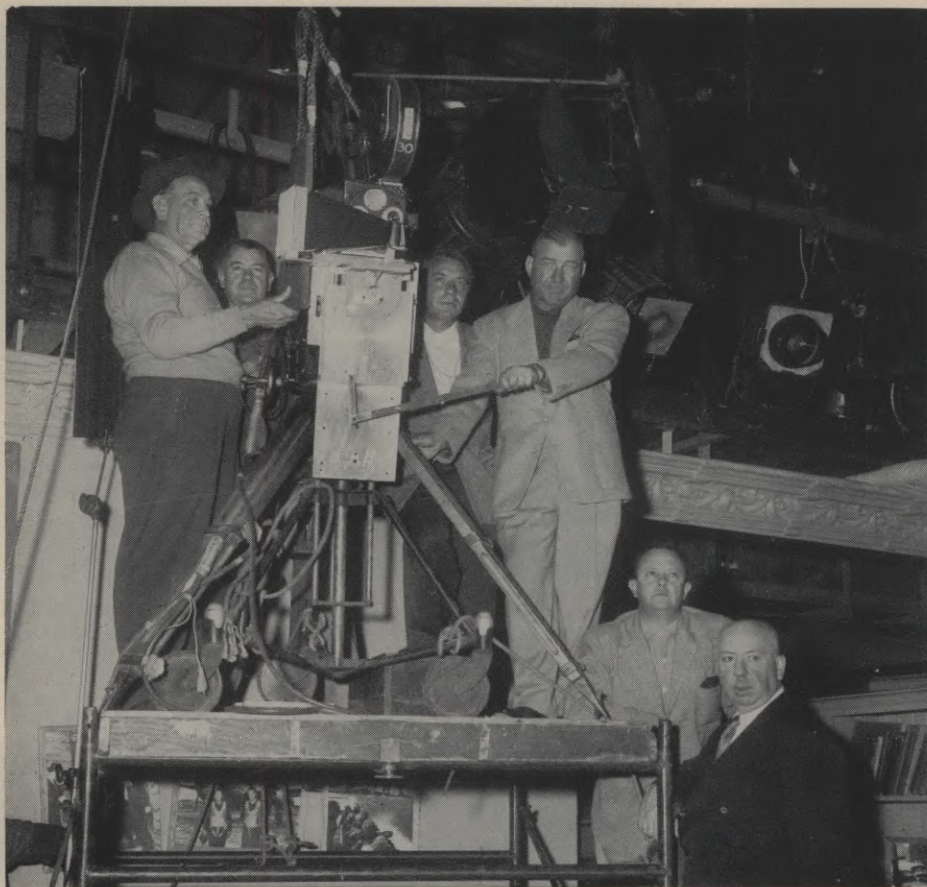


WHEN murder suspect's actions arouse his suspicions, Stewart, a photographer, takes a closer look through telephoto lens of his reflex-type camera, makes incriminating photos of what he sees. Reflected in lens of telephoto is scene he observes across courtyard.



HOW reflection on lens (above) was photographed is shown here. A transparency of the scene is illuminated from rear and set up out of camera range a few feet in front of Stewart. Burks's camera is in shadows just below the bright light to left of transparency.





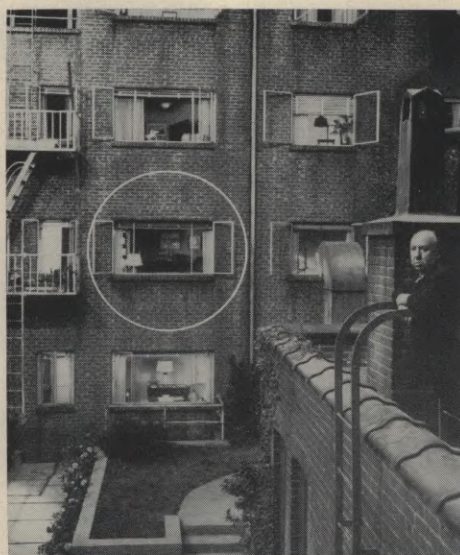
MOST SPECIAL EFFECTS for "Rear Window" were filmed right on the set, whenever possible. Here a unique device is used in conjunction with camera in filming the illusion of Stewart studying and comparing, with the actual scene in the courtyard, the 35mm transparencies he made of murder suspect's actions. Irmin Roberts, ASC, (standing on parallel in front of Burks) is shown operating the gadget he devised for the effect and which involved prisms, short range projection and quick-focus changes.

Because all shots had to be taken as from Stewart's eye-level as he looked across the courtyard to the apartments beyond, oftentimes pinpointing small objects, Burks, shooting the picture in Eastman Color negative and for the wide-screen, had to use a variety of lenses, including the very powerful six-inch telephoto. The latter was used in shooting a great deal of the picture because so much of the action took place across the courtyard—at distances ranging from 40 to 80 feet away.

"Our chief problem here," said Burks, "was definition. Try to visualize shooting scenes in which the players never get any closer to the camera than 70 feet; where our objective is to convey purely by pantomime what is taking place; and you'll understand what problems we had to contend with. All these shots were silent because it would be illogical for Stewart to hear any of the conversations of people inside the distant apartments."

In the beginning, Burks used a 10-inch telephoto; but because the depth of field obtained at the distance was only about a foot and a half or so, the lens was abandoned in favor of a 6-inch

telephoto, and the camera moved out over the courtyard on a boom. Other lenses used were a 2-inch and a 3-inch.



CIRCLE in photo (above left) indicates living room of murder suspect—60 feet away from the camera at all times—where some of the most important action of story takes place, which is filmed by Burk's camera

These three lenses recorded the action as seen by Stewart with the naked eye or with the aid of binoculars or camera telephoto lens.

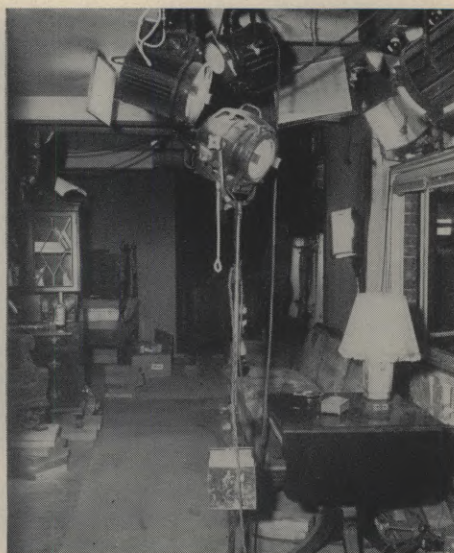
"We used the 2-inch lens for scenes representing Stewart's naked eye point of view," said Burks. "The 3-inch lens was also used for this purpose where double cutting was involved; that is, say, where Stewart studies a certain action across the courtyard, then the camera cuts back to him momentarily, and then back to what he sees. To lend variety, the 3-inch lens was used for the cut-back shots."

"When I started to make the series of telephoto shots," Burks continued, "I began working with the set illumination at a very high key in order to be able to stop down the lens as much as possible to gain depth and definition. Here I was working at 1600 foot candles and shooting at f/5.6.

"We had one shot in the picture that was a key shot in the plot, and it illustrates a typical experience in our use of telephotos. The salesman-murderer is observed by Stewart from his window vantage point going through his wife's effects during her absence. He takes her wedding ring out of her purse and looks at it. Now ordinarily, a shot of this kind would be handled by moving in close and making an insert shot; but we had to sell the idea of seeing the ring from Stewart's vantage point—about 70 feet away on the other side of the courtyard.

"The first time we attempted the shot, we made it with a 10-inch lens. On the

(Continued On Page 97)



set at Stewart's eye point of view. At right is view of interior of same room showing some of the numerous lighting units, scrims, etc., necessary to providing the precise lighting for both day and night effects.

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ON HAND, when the new Arriflex cameras were demonstrated recently for members of the American Society of Cinematographers, was Dr. Robert Richter (second from left), president of Arnold & Richter, makers of the camera. Others in photo admiring features of the new Arriflex blimp are (L. to R.) R. D. Pestonji, Bangkok, Siam; John Boyle, ASC, and Karl Freund, ASC.

New Arriflex Cameras Feature Many Improvements

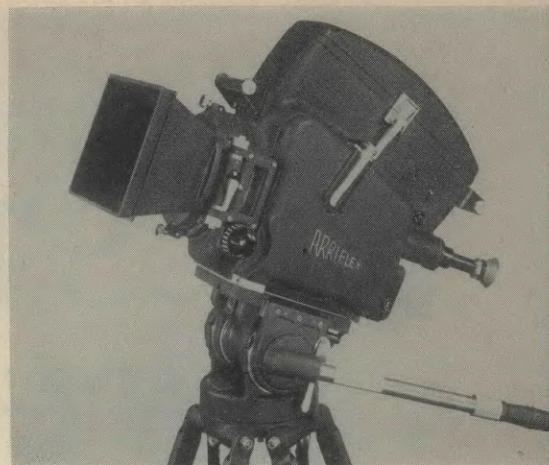
Both the 35mm and 16mm models have features which make them ideal cameras for the most exacting of professional film making.

By ARTHUR ROWAN

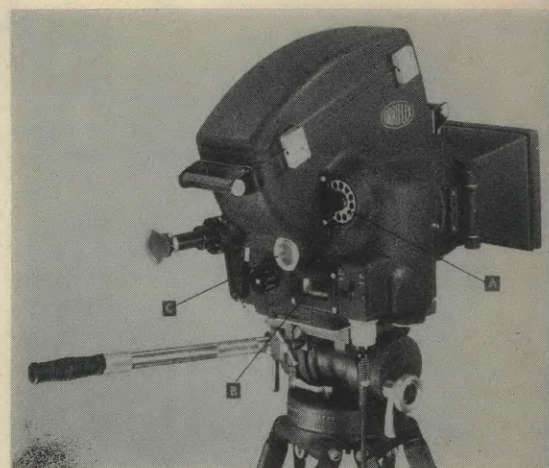
AT THE NOVEMBER meeting of the American Society of Cinematographers in Hollywood, the industry's leading directors of photography were given a preview of the new Arriflex 35mm and 16mm cameras. Present to explain the many new improvements in the cameras was Dr. Robert Richter, president of Arnold & Richter, the West Germany company which manufactures the Arriflex and other motion picture

equipment under the well-known trade name of "Arri."

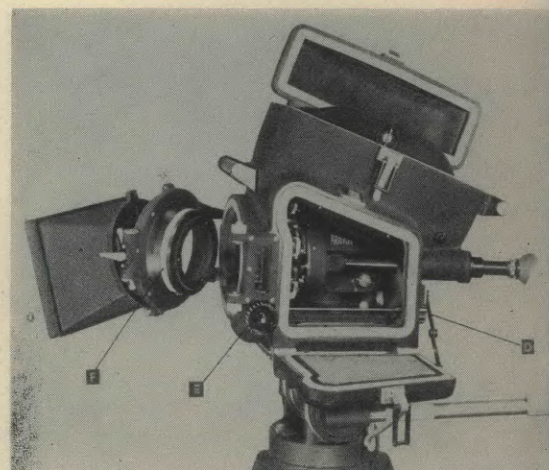
The Arriflex has long been one of the most popular of portable professional motion picture cameras. Now, with the addition of several improved features including a soundproof blimp of advanced design, the 35mm Arriflex becomes an important camera for all-around production use.



1 OUTSTANDING feature of the New Arriflex is the new Arri blimp, designed especially for the camera using 400 foot magazines and sync motor.



2 AT REAR is telephone-dial type threading knob (A), and windows affording observation of tachometer (C) and footage counter (B).



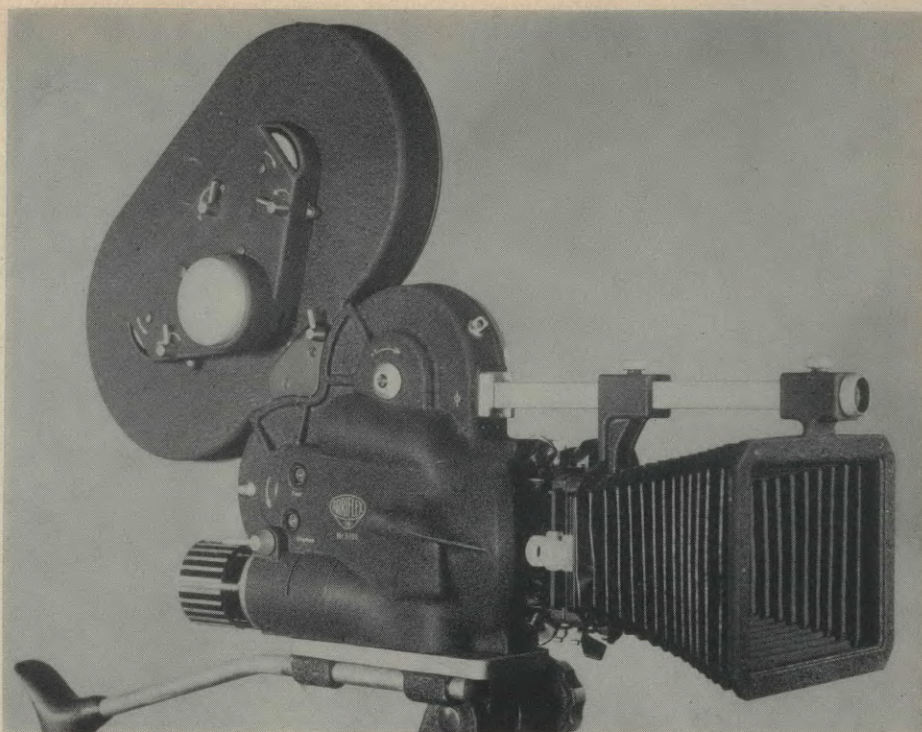
3 EXTERNAL focusing knobs (D and E) afford follow focus control of blimp-mounted Arriflex, while a unique focusing scale (F) affords quick check of f/ stop through small window just above focus control knob (E).

The new model 11A 35mm Arriflex features four important improvements. These are: a new 180° shutter, which increases exposure to 1/48 second at 24 fps.; a new intermittent system that assures rock-steady pictures and perfect frame registration; a new precision-lapped, chrome-finished, stainless steel film gate, which assures absolute focus and frame registration, and prevents film "breathing"; and a new synchronous motor unit. The latter is a smooth-running, constant-speed hysteresis motor for 115-volt, 60-cycle AC operation. This motor is mounted on a base-plate housing (see Fig. 6) which contains the gear mechanism that connects directly to the main drive shaft of the camera. The base plate has a tripod-socket. The motor unit includes a built-in footage counter and a safety slip-clutch which automatically disengages motor from camera should the film "jam."

The synchronous motor unit is easily and quickly attached to the 35mm Arriflex camera without the need for special tools.

Other features, for which the Arriflex 35mm camera is famous include the mirror reflex shutter, which affords through-the-taking lens viewing of the scene during shooting—ideal for follow-focus shots; this unique viewing system eliminates parallax and the need for accessory finders, and affords a bright, uninverted image on the ground glass, magnified 6½ times.

Quick-change, geared film magazines of both 200-ft. and 400-ft. capacity; a variable-speed 8-12 volt DC motor mounted in the grip handle; a tachometer, which registers film speed from 1 to 50 frames per second; a matte-box-filter-holder that is quickly and easily detachable; and a three lens revolving



4 FOR 16MM PHOTOGRAPHY, Arriflex offers its latest model 16mm camera featuring such improvements as "button-on" 400 ft. external film magazine, divergent 3-lens rotary turret, registration pin, and built-in electric motor drive.

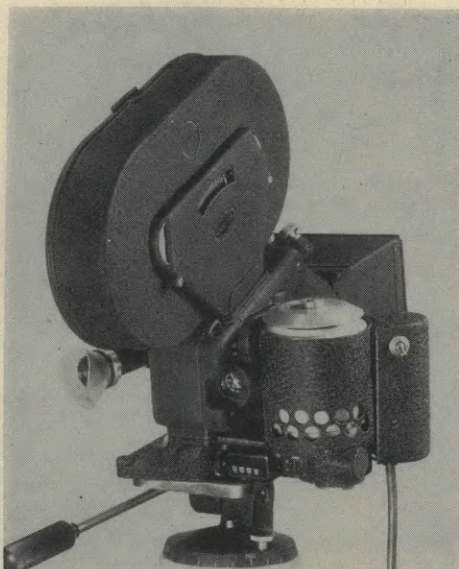
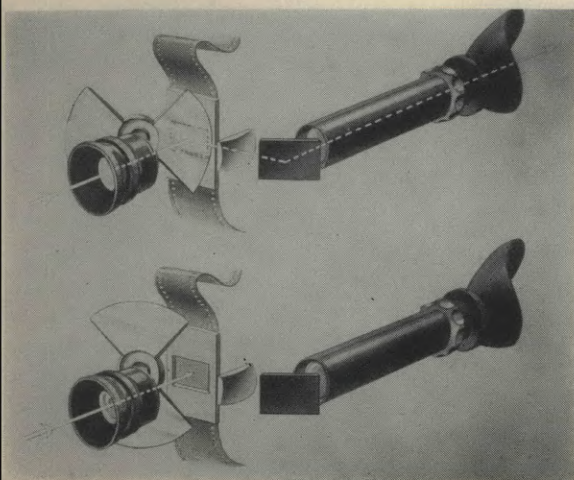
turret are favorable features of this well-balanced camera which is ideal for tripod or hand-held filming.

Fig. 5 shows how the Arriflex reflex shutter operates. The shutter surface nearest the lens is a front-surface mirror set on a 45° angle so that, when the shutter is momentarily closed, it reflects the image from the lens to a set of prisms at the right and thence through the finder optical system, as shown by the dotted lines.

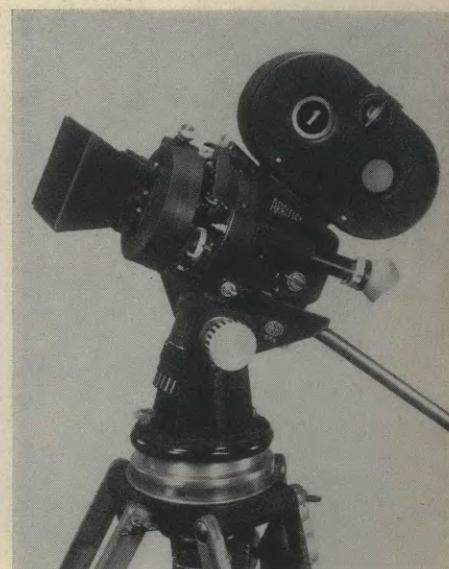
Perhaps the outstanding feature of the new Arriflex 35mm camera is the new Arri sound-proof blimp (Figs. 1 to 3) which has been tailor-made for the camera. Designed especially for use with the camera mounting the 400-foot magazine and synchronous motor unit (already described), the blimp housing is cast of magnesium alloy; the exterior finish is black crackle. The manufacturer claims the most advanced acous-

(Continued On Page 108)

5 HOW REFLEX shutter of Arriflex cameras operates to afford through-the-taking-lens viewing of the scene as it is being photographed, is shown in illustrations below.



6 REAR VIEW of the 35mm Arriflex with 400 ft. magazine and synchronous motor. Motor is quickly demountable without tools.



7 THE BASIC new model 11A 35mm Arriflex camera for handheld or tripod shooting. Variable-speed motor is mounted in grip.



IN THE CRUCIBLE of the film editing department, the many takes are evaluated, trimmed and spliced together to form the final production. Here the work print is scanned countless times in an effort to impart the desired dramatic tempo and story value to the production.

Finishing The Production

After photography is completed, the real work begins in molding the footage into the screen success the producer expects.

By HERB. A. LIGHTMAN

IT IS A BALMY night in Hollywood. The sky is slashed by the frosty beams of giant searchlights. An exquisitely-groomed crowd of brilliant celebrities moves into the theatre to see a gala premiere of "The Robe," "Miss Sadie Thompson" or "Julius Caesar." Everyone interviewed by the man at the microphone is sure the picture will be great—and it probably will. But while the stars, the producer and the director will receive the major credit for a fine job, there is another group of men far behind the scenes whose contributions were indispensable to the picture's success, but whose names may not even be mentioned. These are the men who put the finishing touches to the movies after they are photographed.

When the cameras have stopped rolling, and the last scene of a film is "in

the can," the real work of picture-making then begins. Up to this point the weeks, months or years of preparation that have gone into the writing and shooting of the script, remain creatively unrealized. The separate bits and pieces of film—often photographed at the expense of much blood, sweat and tears—do not, as yet, have meaning or coherence. It yet remains for a staff of highly skilled technicians to lend their special know-how to the crucial operation—the finishing of the film.

In the production of the average Hollywood feature, several hundred thousand feet of picture and sound track are shot. This tremendous mass of original material must be "boiled down" in an editing process to produce a picture that will run the required eight or nine thousand feet in length. The operative

steps in between amount to a great deal more than (as the layman says) "cutting out the bad parts."

The dramatic and artistic values achieved by the editing, scoring and dubbing processes are as important as those conceived and executed in the writing and directing phases. The finishing of a film is no mere mechanical accomplishment, but rather a highly creative process of selection and arrangement of dramatic elements to capture and hold audience attention.

Effective editing begins with careful pre-planning. The script writer, for example, does not merely write words on paper. He must first "see" a sequence as it will play upon the screen, then set down the blueprint of that sequence in terms of action and dialogue. In his script, he breaks the sequence down into separate scenes and camera set-ups—and if he has visualized the situations in their proper cinematic relationship to each other, then he can be said to have pre-edited the film on paper.

The director then takes the script and, using it as a blueprint, interprets the meaning of the printed word in the kinetic language of screen action. It is his prerogative to stage a sequence precisely as indicated in the script, or to use the script as a starting point and allow his creative imagination to soar beyond the literal blueprint.

Whichever may be the case, the film editor inherits the many fragments of celluloid thus exposed and assumes the task of fitting the huge jigsaw puzzle together to crystallize the original conception of the writer and/or director. In so doing, he adds something of his own interpretation to the story, since it is a fact that the same batch of exposed film can be put together in so many different ways that there would be a vast difference in pace, tempo and emphasis in each separate version.

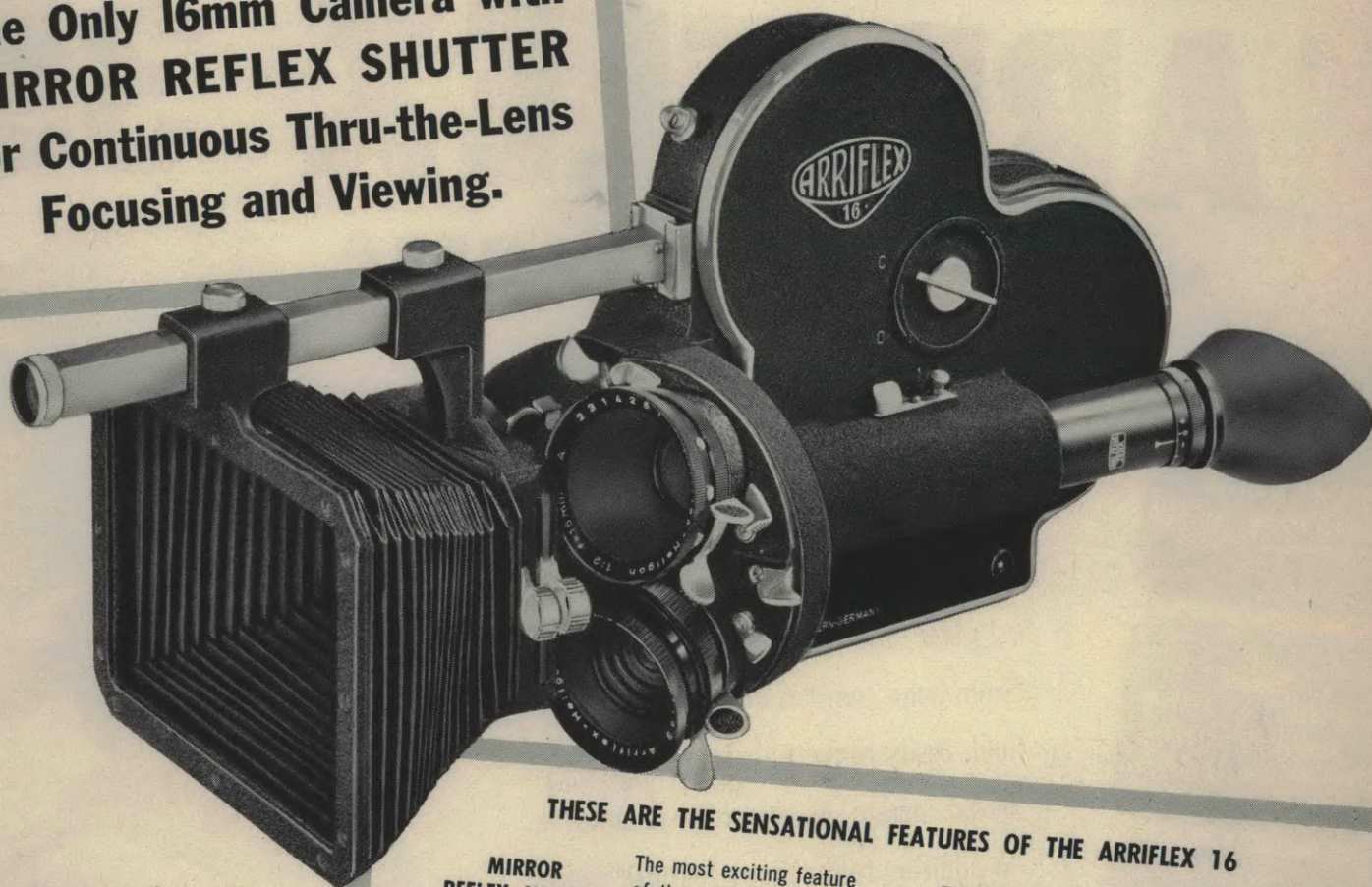
Throughout the filming of a picture in Hollywood, the supervising film editor spends a great deal of time on the set, working closely with the director to see that the various angles and action patterns as staged will later cut together smoothly. Very often he will request, for protective coverage, photographing additional angles or scenes not indicated in the script, or he may suggest methods of staging that will permit more effective cutting.

The film exposed during each shooting day is usually processed the same night and prints known as "dailies" or "rushes" are available next day for screening before the director, editor and other technicians concerned. This provides a constant check on technical quality, actors' performances and photographic coverage of the action. At these

(Continued On Page 94)

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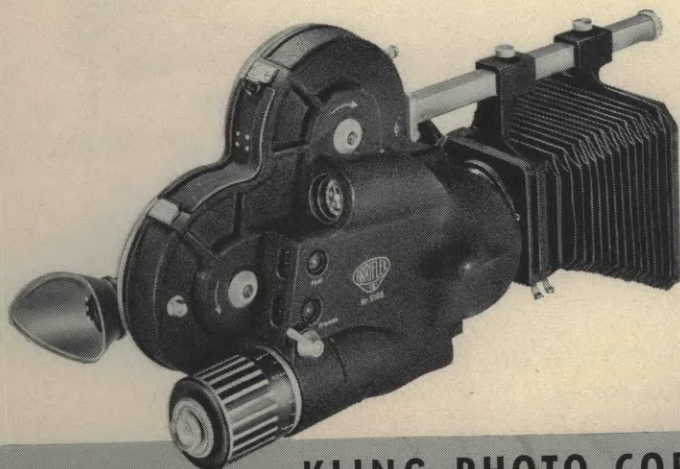
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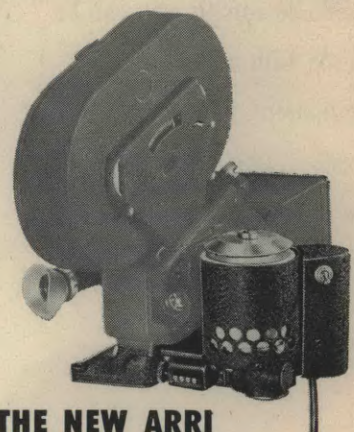
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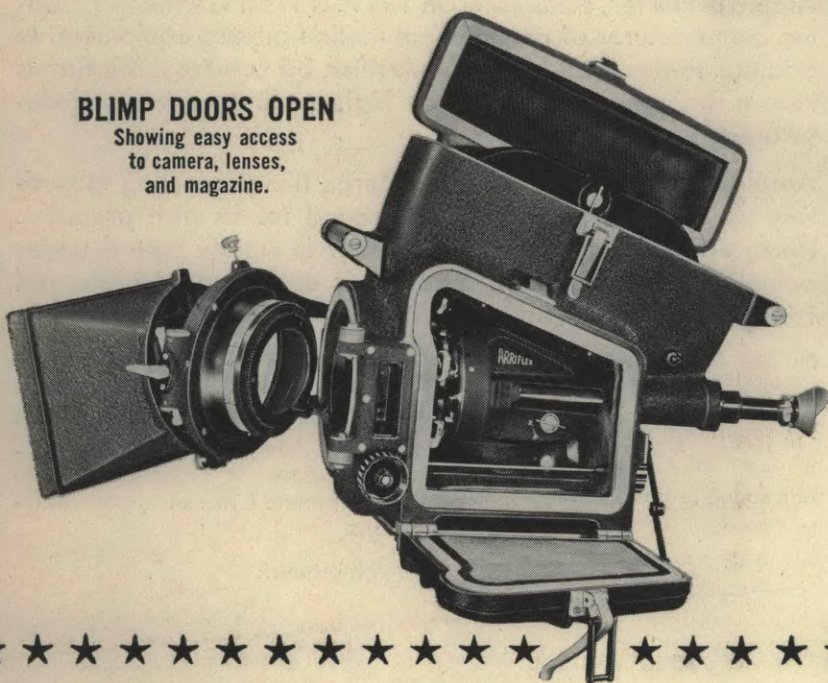
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Weight of Blimp with Arriflex 35, lenses, Synchronous Motor Unit, and 400-foot Magazine is approximately 55 pounds.

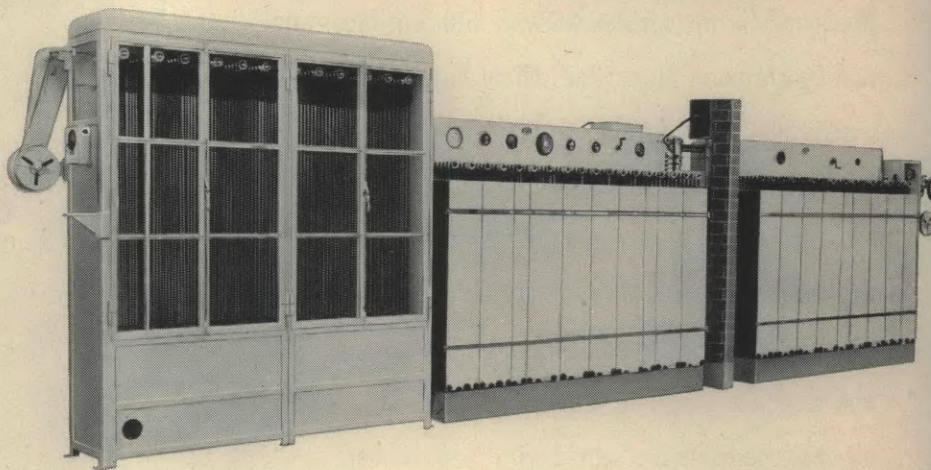
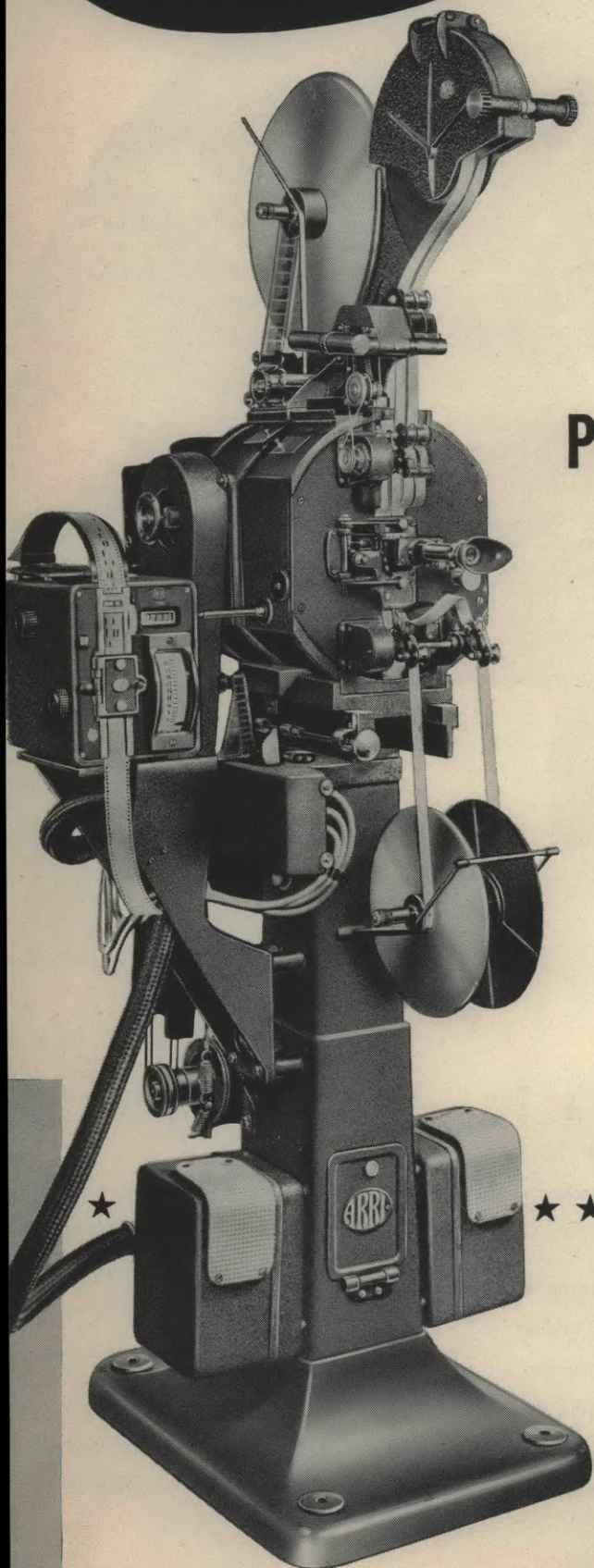
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ACTION which is slow in its dramatic tempo is often best treated with somber, low-key lighting; while a more swiftly-paced narrative tempo is better served by brighter, higher-key lighting.



COMEDIES, which are dramatically exaggerated in both narrative and physical tempo, usually require exaggeration in lighting. An example is "The 5000 Fingers of Dr. T," photographed by Frank Planer.

Accenting Tempo With Lighting

When lighting is carefully planned to suit the mood or action set by the script, it can enhance the progressive flow of the story.

THE AFFINITY between tempo and lighting in motion picture photography is sometimes difficult to define. It exists, yet it is not easy to describe in concrete terms.

Tempo is essentially dynamic; lighting is generally static. And there is a fundamental point of contact between the two in that both are means of producing, visually, positive psychological responses. Therefore, as such, they must be closely coordinated.

We think of tempo in motion pictures as indicating the degree of swiftness or slowness with which a scene or sequence moves. It may be subdivided into two interdependent categories: 1) physical tempo, and 2) dramatic or narrative tempo.

The former refers to the physical pace of the action filmed. Obviously, if action moves at a swift physical pace, it will consume less screen time. The eye of the viewer must react more swiftly, in order to perceive and transmit to the brain a clear mental image of the action in the brief time allowed. Here the cinematographer's presentation of the action must be such as to assist in this quick visual reaction. The composition

should be simple, allowing the eye at once to focus attention on the salient action. The lighting should aid in this—be incisive and brilliant, though not necessarily of a high key, in order to facilitate quick perception of motives in the action or scene.

Let us take a swift-moving battle sequence as an example. Here the visual treatment should be such as to reveal the vital points of the action at a glance. Primarily, this would be achieved by maintaining a low visual key demanded by the action, and by increasing scene brilliance; or by simplifying the visual scale to a readily-perceived range of positive highlights and shadows, with a minimum of intermediate halftones.

By contrast, quick visual perception is not so vital in an essentially slow-moving sequence. Here the photographic tempo may be slower paced. A greater degree of visual softness is possible, and the lighting and compositional treatment may become more intricate.

Where there is a definite sense of physical movement to be conveyed, proper set lighting can do a great deal to enhance the effect. For example, let us consider filming a scene of a parade,

or of a company of soldiers on the march. Both are examples of forward physical movement which can be heightened visually through lighting. Few directors of photography shooting such a scene for a studio production would light it flatly. No matter whether nat-

(Continued On Page 96)



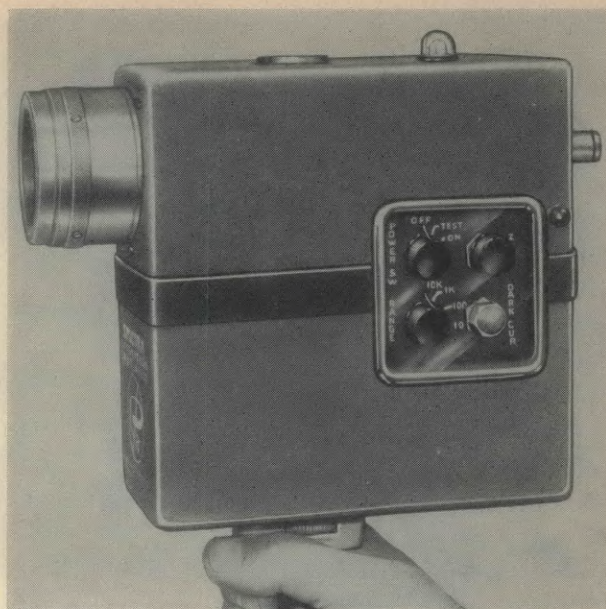
AN OUTSTANDING example of tempo in lighting is "The Four Poster," which Hal Mohr, ASC, (left, in background) photographed for Stanley Kramer.

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Care And Handling Of Film In The Tropics

Some pointers that will insure complete film safety for those planning a filming expedition to tropic climes.

By JOHN FORBES

TOO OFTEN the amateur venturing into tropic lands for the first time to make movies suffers irreparable loss of valuable footage because of ignorance in caring for film—both unexposed and exposed—when in tropic climes. This is perhaps the most important consideration when planning a filming venture, be it a vacation trip or a carefully prepared filming expedition, which will take you and your camera and film into tropical regions.

The dangerous element in the tropics is the combination of extreme heat and equal extremes of humidity. Where the climate is both hot and dry, the amateur filmer's problem is reduced to the relatively simple one of protecting his film from direct sunlight, keeping it as cool as possible. Where there is both

heat and humidity the film must be guarded against damage from mildew, which has a deteriorating effect on unexposed emulsions.

When exposed film is kept for long periods in high temperatures, a chemical fog is generated; and in addition the latent image is deteriorated to such extent that in many cases it is scarcely visible after development.

All motion picture film intended for use in the tropics, or which is to be transported through the tropics, should be purchased in the special hermetically-sealed tropical packing. It is advisable also to purchase your film supply in small rolls, i.e., in 400 or even 200 foot rolls rather than in 1000-foot rolls—so that only the film necessary for any

given day's shooting need be unpacked at one time.

On the tropical location, care must be taken to keep all exposed and unexposed film in dry, cool storage, and never in contact with damp ground or in places where the hot rays of the sun can fall on the film container.

Film magazines, where such are used, should not be loaded until immediately before use, and should be wrapped carefully in waxed paper where some time will elapse before using. Exposed film should be packed in dry black paper, without rewinding.

The filmer should exercise care, when loading and unloading film from his camera, to make sure that perspiration does not fall on the film or on the paper in which it is wrapped. The best precaution against this is to wrap several layers of cheesecloth about the wrists and forehead, which will absorb perspiration during the film-handling period. The hands, of course, should also be kept dry by wiping them frequently.

All camera accessories should also be kept away from the direct rays of hot sun or other excessive heat. This is especially true of lenses and filters, which are easily ruined by intense heat or direct, strong sunlight.

After movie film has been exposed, it should be dehydrated or dissicated (the moisture removed) before it is canned and packed for shipment to the laboratory. However, this does not mean the film should be dehydrated to the point that it becomes dangerously brittle. If it does, it may crack or break, and it is certain also to develop static marks when unrolled.

There are two general ways of dehydrating film, writes Jackson J. Rose, ASC., in the latest edition of his "American Cinematographer Handbook and Reference Guide." The procedures are as follows:

1) Take black paper (the kind used by film manufacturers in packing film)

(Continued On Page 93)



TED PHILLIPS' highly successful motion pictures of Jamaica in 16mm Kodachrome were due in no small part to infinite care in protecting his film supply from the effects of heat and moisture of the tropics.

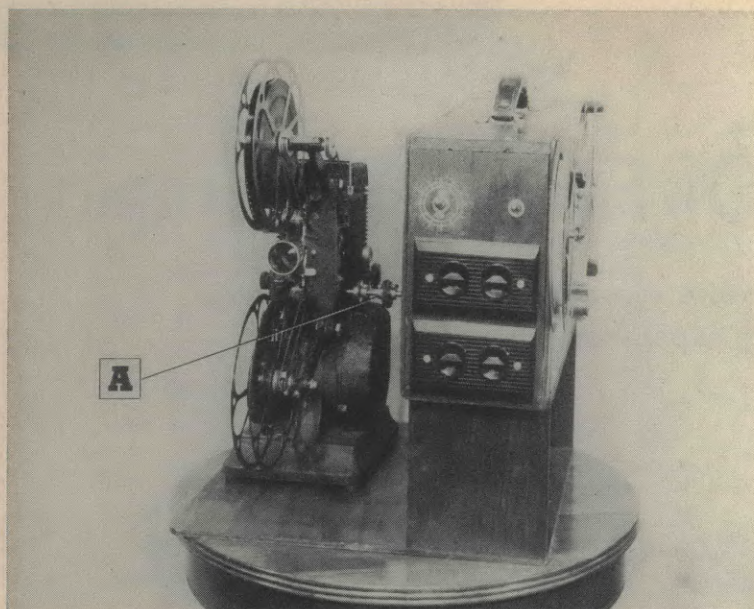


FIG. 1—Author's original adaptation had the recording unit used with the camera coupled to a 16mm Ampro projector by means of a shaft "A." Playback head was wired to a Brush home recorder which served as amplifier and speaker during projection of sound films.

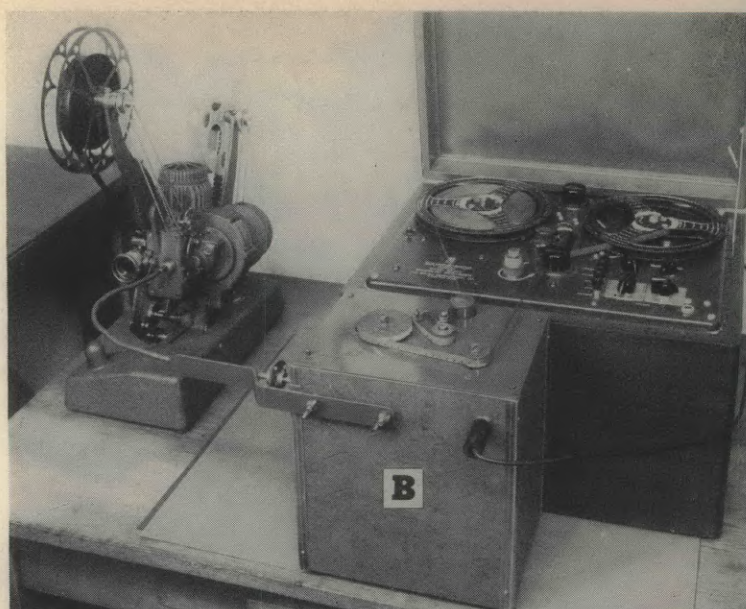


FIG. 2—This adaptation employed Bell & Howell 16mm projector driving special gear box with playback head on top. As before, Brush tape recorder served as electronics system and the speaker. Method of threading magnetic sound film utilized Brush unit for takeup.

Magnetic Sound For Any Projector

This month George Cushman describes three methods of linking up a homemade magnetic film reproducer with projector to play back sound recorded with the camera unit described here last month.

By GEORGE W. CUSHMAN

LAST MONTH, in response to increasing demand by readers for practical information regarding the application of magnetic sound to home movie films, I discussed a method of recording lip-sync sound with simple homemade recording equipment coupled directly to the camera, and described the recording equipment designed and built by the author.

This month, I shall deal with the apparatus necessary to playing back the sound tracks made with the camera equipment, and describe some of the systems with which the author has experimented.

Three different methods employing three different hookups between the playback instrument and the projector, are pictured in the photos above.

To play back a sound track recorded by the equipment described last month,

the recording unit itself may be converted as a playback unit and coupled to the projector (as it was with the camera) by a single drive shaft, as shown at "A" in Fig. 1 above.

As the illustration shows, a shaft extending from the recorder is joined to a shaft extending from the projector, with a flexible coupling in between.

In the recording-photography stage, the shaft of the recorder was coupled directly to the camera, which operated at 16 fps. For use of the recorder with the projector, the shaft is coupled to either the upper or lower 8-tooth sprocket shaft, which moves the film through the projector at the same speed it was photographed—16 frames per second. The projector in Fig. 1 is an old silent 16mm Ampro, Model J.

In projection, as in the recording stage, I use the amplifying system of

a home tape recorder. In my case, as explained last month, the amplifying system of a Brush Model 401 tape recorder served this purpose. I merely disconnected the two wires leading to the Brush recording head and connected them to the leads of the head on my recorder.

In using this equipment, my Brush tape recorder amplifying system serves for both recording and playback. If you own one of the modern home tape recorders, it can be similarly adapted for this purpose, and thus save you the expense of building (or buying) an amplifier. Excellent sound quality can be obtained if the Shure head on the recording or playback unit is equalized to match the circuit of the home recorder being used for an amplifier.

All of the projectors which I have used in conjunction with my equipment

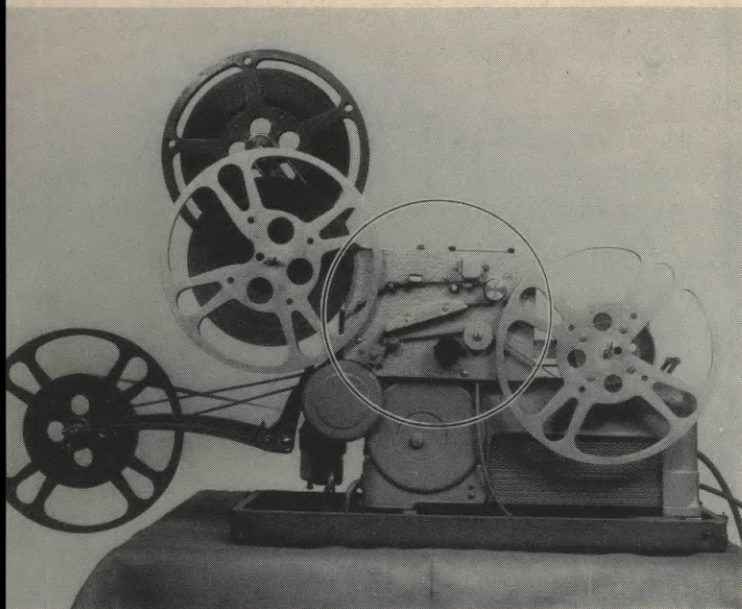


FIG. 3—Author's latest adaptation. Here, magnetic film playback unit (circled) is mounted at rear of an Ampro Model 30 Premier sound projector, and plays through the projector amplifier system. Volume is ample for use in auditoriums of moderate size.

for playing back magnetic sound films have been 16mm Ampros, except one. Ampro projectors proved most ideal because the shaft which drives the 8-frame-per-revolution sprockets can be easily extended as required. It is necessary to install a longer shaft in order to be able to link the projector with the recorder. To do this, the side panel of the Ampro projector must be removed. The 8-tooth sprocket of the projector is also removed, which permits the shaft to come out easily. Next, the drive gear, which has been pressed onto the other end of the shaft, is removed by gently tapping with a small hammer.

The new shaft, which may be made from a piece of 1/4-inch drill rod, should be approximately 3 inches longer than the original shaft—or long enough to protrude beyond the projector to permit coupling with the recorder.

Before replacing side panel on the projector it will be necessary to drill a hole for the new shaft to extend through. A template carefully prepared for this will insure proper centering of the hole.

In the project pictured in Fig. 1, it was necessary also to build a support for the recorder, to lift it so that the shafts of the instruments were on the same level, and thus easily coupled together by means of a collar and set screw.

In this arrangement, the motor of the projector is disengaged from the film transport mechanism. This leaves it free

to be driven by the motor of the recorder, which drives both units in synchronism. With some projectors, this method might place too great a load on the recorder motor, resulting in the two units turning slower than normal speed. In some cases, the projector motor can be re-engaged with the mechanism and turned on to supplement the recorder motor. Here, patience and experimentation will solve the problem.

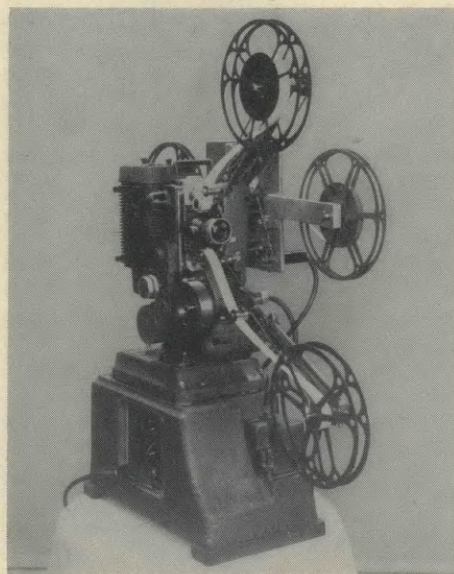


FIG. 4—Another Ampro sound projector adaptation. Playback unit is mounted at rear, and sound plays back through the projector augmented with a pre-amplifier.

Needless to say, this simple coupling of recorder-playback unit with projector assures complete synchronization between picture and sound track, and after using the combination for more than a year, I found little to be desired. In time, however, this "little" became "big," due mostly to the bulkiness of the equipment. Each time I wanted to screen one of my pictures with sound away from home, I had to carry three units—sound recorder, my home tape recorder, and the projector.

To get around this problem, there was only one answer: build the three components into a single unit, or rather—start with a 16mm sound projector (which incorporated two components, including the very important amplifier) and add on a compact unit for transporting the magnetic sound film in sync with the picture film. This I did, and the results may be seen in Fig. 3. However, there was an intermediate project before this was completed. My first efforts were with a model UA Ampro-sound projector (Figs. 4 and 5). Here the recording unit, consisting of a panel carrying the film transport mechanism and recording head, was mounted on the far side of the projector. The panel was made of 1/4-inch aluminum plate, approximately 7 inches square. In mounting it to the projector, the existing four screw-holes in the chassis necessary to mounting the projector side

(Continued On Page 102)

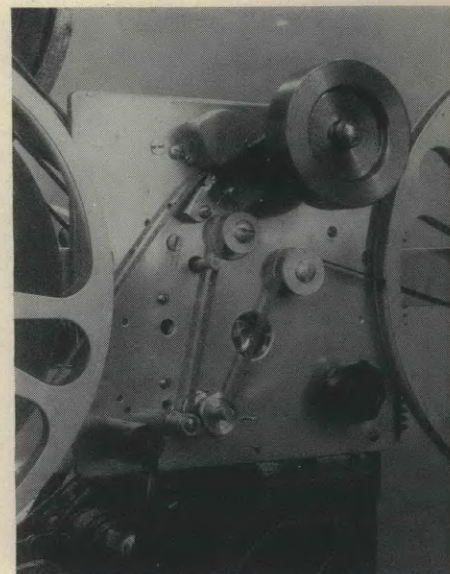


FIG. 5—Detailed view of the playback unit film transport system and head. Arrangement is essentially the same as that described for camera unit last month.

SWAP YOUR ODD SHOTS

with other readers of
American Cinematographer

Need some special footage in 8mm or 16mm, color or black-and-white? Got odd footage or stock shots you'd like to swap? Want to shoot local scenes or subjects for other cine amateurs? Then tell them about it in the Odd Shot Column. This service is free to amateur movie makers.

Editor:—

I need extra footage for a 16mm film of the North Woods. I need any and all kinds of shots in 16mm of wildlife; common animals of the North Woods and of Wisconsin, Minnesota, and Michigan, such as beaver, otter, squirrels, porcupines, etc., also footage of birds. I am particularly interested in footage of 25 ft. or more of each subject, either black-and-white or color, silent or sound. All such footage must have been shot in the "wilds," with cottages, telephone poles, etc., omitted from scenes.

Will buy footage, or shoot "swap" footage in trade for any subjects in the Chicago area.

—Richard Dix,
3042 N. Sawyer Ave.,
Chicago 18, Ill.

Editor:—

I have 16mm Kodachrome footage available of the Skagway, Alaska, area and also of the Chillkoot Pass, scene of the '98 Gold Rush. Will also shoot footage in this area on assignment for cine amateurs.

—Wesley W. Patterson,
P. O. Box 332,
Skagway, Alaska.

Editor:—

New York State—western part. Have some 16mm Kodachrome. Can get or will shoot anything reasonable. Want Florida and other scenes in 16mm color to fill in for shots missed on recent 4200 mile tour.

—Bert Patterson,
133 Dean Road.
Spenceport, N. Y.

Editor:—

I have 16 mm footage of the famous Macy Thanksgiving Day parade; also other scenes of New York city to swap with other cine filmers who wish to add footage to their travel films. Will also shoot footage in New York City on special assignment.

—Irving Brady,
331 E. 18th St.,
Brooklyn 26, N. Y.

3-D Film Festival To Be Held At A. S. C. Clubhouse In Hollywood

Jury of prominent Hollywood directors of photography will evaluate films for the Festival screening beginning this month.

HOLLYWOOD will have opportunity next month to see for the first time the sort of three-dimensional movies that are being made by 16mm movie makers, both amateur and professional, when the best of the 3-D films entered in the *American Cinematographer's* first 3-D Film Festival will be screened.

The program will take place at the clubhouse of the American Society of Cinematographers in Hollywood the evening of March 4.

Films have been entered by movie makers of several foreign countries, as well as those in the United States, and cover a wide range of subjects. Some have synchronized sound, while others are the usual "silent" type amateur movies. All films submitted thus far are in color.

The festival has been limited to films made with the aid of any one of three single-film, single-projector systems, i.e., Bolex, Nord, or Elgeet. There is likelihood that one or two other films, made with other systems, will be screened purely as demonstration of the results to be had with other types of 3-D filming equipment; but they will not be considered as competition for regular festival films.

Unlike in movie-making contests or competitions, none of the Festival Films will be rated for "First," "Second" or "Third" choice, etc.; instead each film chosen by the panel of judges will win for its maker the Merit Filming Award of *American Cinematographer* magazine.

The judging panel is made up of four prominent Hollywood directors of photography who have themselves photographed some of the industry's most successful 3-D motion pictures. Thus, those who submit 3-D films in this Festival will enjoy the opportunity of having their work evaluated by professionals in the same field of cinematography.

The judging panel includes Peverell Marley, ASC, who photographed "House of Wax"; Ellis W. Carter, ASC, who photographed the currently popular "Cease Fire" in actual locales in Korea; Charles Lawton, Jr., ASC, who photographed "Miss Sadie Thompson" for Columbia Pictures; and Lester White,

ASC, another Columbia Pictures' cinematographer who has photographed a score of 3-D productions for that studio. This illustrious group will begin screening and evaluating Festival entries immediately following the closing date for entries—February 15th.

As far as is known, this is the first time that a competitive event of any kind has been conducted anywhere for 16mm 3-D motion pictures. *American Cinematographer's* 3-D Film Festival is open to all makers of amateur, semi-professional and professional 16mm single-film, three-dimensional motion pictures, black-and-white or color, sound or silent.

Only 16mm 3-D films made on a single strip of film with either Bolex, Nord or Elgeet camera attachments, and requiring but a single 16mm projector for screening, are being accepted as Festival entries.

When the Festival was first announced in the June issue of *American Cinematographer*, there was immediate response from 16mm film-makers from foreign countries, including England, South Africa, and the Netherlands. Interesting is the fact these inquiries were immediate and preceded those which very soon after began to come in from film-makers in the United States.

No entry blank is being included in this issue by the editors in view of the proximity of the closing date for entries. An official Festival entry blank has appeared in several earlier issues of *American Cinematographer*. It is necessary to fill out and submit an entry blank in advance of sending an entry for the Festival.

Despite the waning interest shown by the public in theatrical films made in 3-D, there is continuing interest among 16mm movie makers for making stereo films. Also, there is increasing use of 16mm 3-D in the production of industrial, promotional and educational films, where depth and full dimension produces a greater impact perhaps than where stereo is used solely as a "gimmick" or novelty for a feature production.

Festival results will appear in the March issue of *American Cinematographer*.

CARE OF FILM

(Continued From Page 89)

and dry it thoroughly by heating it in an oven. When dried sufficiently, pack it loosely in a light-tight box; place the film (wound loosely) in the center of the paper and allow it to remain over night. The paper will absorb any excess moisture from the film; thereafter, it should be packed immediately. The black paper used in dehydrating can be dried again in the oven and re-used.

2) Take a metal container partially filled with calcium chloride and place on the bottom of a large, light-tight and air-tight wooden box. Into this box also place a large quantity of black paper and also the exposed film. Allow film and black paper to remain in this desiccating box for at least 24 hours. Then wrap the film in the black paper and seal it in shipping cans. In using this method, care must be taken that neither the black paper nor the film come in contact with the calcium chloride; otherwise the film will show spots that cannot be removed. The calcium Chloride may also be re-used many times before discarding.

After dehydrating by either of the above methods, the film should be wrapped immediately in dry black paper and sealed in a dry film can. Seal the can with tape in the usual manner, then paint the tape and edge of can with hot paraffin to form an air- and moisture-tight seal. The Photo Products Division of the DuPont company offers an excellent black lacquer for this purpose.

It is not advisable to use newspaper or any kind of wrapping paper for packing film, as these generally contain chemicals which can prove injurious to the sensitive emulsion.

A final precaution is always to keep salt air from reaching your film. It has a tendency to fade exposed film and to produce moisture spots. Therefore, when shooting movies at tropic seashores or on board ship in tropic regions, load film indoors, and do it as quickly as possible so that the film will not suffer any adverse effects from exposure to marine air.

The preceding article is condensed from "American Cinematographer Handbook and Reference Guide," published by Jackson J. Rose, ASC, Los Angeles, Calif.—Ed.

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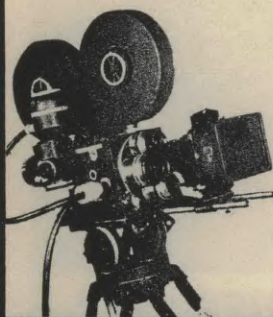
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FINISHING THE PRODUCTION

(Continued From Page 82)

screenings, the director and editor usually discuss which *takes* and angles should be used in the initial cut of the picture.

The good takes are assembled by the editor into a *rough cut*, while the rejected takes are filed for possible future reference. In this rough cut, the editor works mainly for continuity, assembling the scenes in their proper order. In a later cut he will work for pace, tempo, emphasis and variety in camera angles.

All professional films today are shot "double-system"—that is with the sound recorded simultaneously but with a separate recording instrument. The picture film and sound track film are given "sync" marks at the beginning of each take, either by means of clapsticks or by mechanical devices in the camera and the recorder. Picture and corresponding sound track are edited side by side on a machine called a *Moviola* (consisting of a picture-viewing scope and a sound speaker) through which picture and track can be run in synchronization.

Each sequence is rough-cut as soon after shooting as possible, so that if any retakes or added scenes are needed, they can be made while the set-up on the sound stage is still intact. The sequences are assembled in order according to the script to form a work-print of the complete film story. This work-print usually runs from ten to fifteen thousand feet in length, and is rather loosely paced. The director and editor then combine their efforts to smooth out and whittle down this footage so that a forceful, coherent motion picture of normal length is achieved.

In this final editing process, some scenes and sequences are shortened to tighten up the tempo, while others may be lengthened to emphasize a particular element. Still others, which prove to be superfluous or which may tend to slow down the story, are eliminated completely.

The work-print is now run and re-run for the producer, director and editor. The last editing process is a tedious one in which a foot of film here and a frame there are carefully pruned to effect the exact match of action, the precise pace of timing. Meanwhile, sound cutting has also progressed. The dialogue, of course, has been edited along with the picture. If necessary, however, dialogue not satisfactorily recorded at the time of photography is re-recorded and dubbed in or "looped." This is often the case in outdoor location se-

quences where traffic noises or other extraneous sounds make it impossible to record a clean track.

From a huge library of recorded sound effects, the effects cutter chooses appropriate background sounds necessary to add further realism to certain sequences. He cuts these in to fit the action. When a continually recurring sound, such as train wheels clicking over tracks, is required over a lengthy sequence, he makes up a "loop" of that sound track, which is played back continuously in the re-recording stage.

If an original music score has been ordered, the composer's task is to time his themes to the finished cut and record them for proper length. If library music is used, the music cutter must tailor the existing themes to coincide with the action.

Dialogue, sound effects and music are assembled in synchronized dubbing units for each reel of picture and sent to the dubbing stage for final re-recording. Here as many as fifteen separate sound tracks may be mixed or blended in a final master recording as a work-print of the picture is run off on a screen. The result is a single track in which all sound elements are balanced in proper relationship.

The advent of stereophonic sound, developed to complement CinemaScope and other wide-screen processes, has added a new dimension to sound, and at the same time has vastly complicated recording and dubbing processes. With the new stereophonic sound systems, three or more microphones are used to match sound perspective to the changing perspective of the visual action. The resultant multiple tracks are recorded side-by-side on magnetic film to be played back in synchronization with the picture. New magnetic oxide coating procedures are presently being developed that will permit the multiple magnetic tracks to be recorded on the release prints.

When all reels of the picture have been dubbed, a preview print is made and a "sneak" preview is generally set up to test average audience reaction. In an effort to get an honest response from a typical audience, the film is usually previewed without fanfare in a suburban or small town movie house. During the running of the film, the producer, director and editor study the reactions of the audience. Do they laugh in the right or the wrong places? Do they become restless during certain sequences and get up to buy popcorn? Do they respond properly to the emotional values of the more dramatic sequences?

The responses of the preview audience may differ greatly from those which studio executives have been receiving in their own projection rooms. These men have "lived with" the picture for months and they tend to lose fresh perspective after a while, whereas a typical audience seeing the picture for the first time will come through with a spontaneous response that is more valid, at least in terms of box-office, than that of the experts.

After the preview, the audience often is invited to fill out cards rating the film, and offering suggestions. On the basis of this criticism, as well as the actual response of the audience observed during the preview screening, certain changes in the film may be indicated. Various sequences may subsequently be tightened up or deleted. Retakes or added scenes may be needed to point up the story or smooth out the continuity. Further "sneak" previews may be held and further refinements made, but inevitably the release date draws near and a final cut of the picture approved.

When this is done, the original negative is cut to match the approved preview print. Dissolves and other optical effects are printed on fine-grain master positive made from the original negative, and these are cut into the positive master from which dupe negatives will be made for release printing.

In the laboratory each scene is given a careful final timing so that the answer print will present the photography and changing visual moods of the story to best advantage. Technicians view the answer print as it is screened and may make further adjustments in the printer light settings. A final sample print called a "studio copy" is struck, and on approval by the production office is considered the standard of technical quality which all subsequent release prints must duplicate as closely as possible.

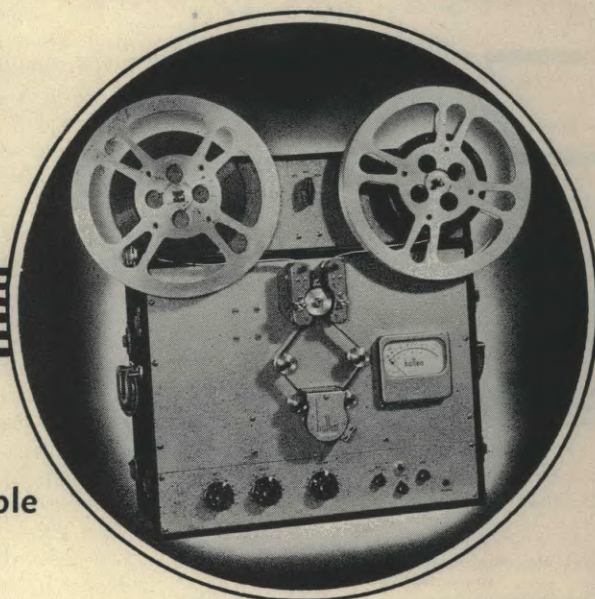
Actually, few in the lay audience fully realize the great amount of work that is involved in finishing a picture, after the photography is completed. Indeed, it often happens that some who are embarking on a major film production for the first time have any conception of the great amount of work that must be done by relatively obscure but important technicians before the production is completed and ready for exhibition.

The steps that are necessary to make a feature production ready for general release, are also necessary to completing other sound films that are to be given public exhibition, such as industrial, training, promotion and educational films. The procedure is essentially the same for all classes of productions.

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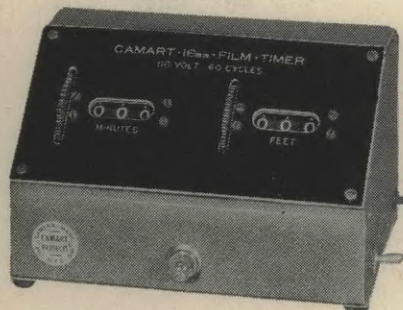
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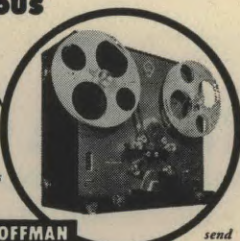
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ACCENTING TEMPO WITH LIGHTING

(Continued From Page 87)

ural or artificial illumination were used, the photographic thing to do would be to employ some cross-lighting, creating if possible parallel planes of pronounced light and shade across the line of march. The movement of the actors across this alternate light and shadow pattern accentuates the sense of physical movement, and enhances tempo as a result.

The same lighting principle is often used when photographing actors inside a moving automobile or other vehicle at night. A greater sense of movement is imparted by the changing pattern of light and shade falling on the players in the vehicle's interior, simulating the effect of changing illumination from street lights as the car moves along the thoroughfare.

The greatest application of lighting tempo, perhaps, has been in the photography of musical films. In musical and dance numbers, especially, there is definite physical movement and strong rhythm. Here imaginative lighting can play a big part in enhancing the sense of rhythmic movement, and consequently of tempo of the sequence.

In this respect, there were times in the past when the approach of a producer in staging a musical film was decidedly illogical. The practice was to design and build the sets first, with the musical director tailoring his dance routines and the music to the limits of the set. The director of photography in turn had the task of trying to achieve some reasonable coordination of the two in the lighting and camera work. More recently, the general approach in musical productions is to design the set to conform with the dance routines and the music in order to enhance tempo—a matter which the director of photography complements further in lighting the set.

The matter of dramatic tempo is rather less tangible than physical tempo. A given scene or sequence in a production may achieve a dramatic pace more or less independent of the physical pace of its component movements. It is possible to conceive of a scene in which very little physical action occurs, yet which advances the story at breakneck speed; or of one in which a maximum of physical movement produces the minimum of dramatic advancement. In such cases, it is often the practice to plan the photography and lighting for dramatic tempo rather than to the physical.

This borders very closely upon the subject of mood, although it is by no means an exact parallel. As a general rule, the more somber of dramatic moods suggests action which is slow in

tempo while the lighter and gayer moods are synonymous with brisk tempo.

In much the same way, action which is slow in its dramatic tempo is often best treated with somber, low-key lighting; while a more swiftly-paced narrative tempo is better served by brighter, higher-keyed lighting.

Melodrama and broad comedy, both of which are dramatically exaggerated and therefore maintain an exaggerated dramatic as well as physical tempo, require more or less exaggeration in lighting. Screen melodrama, for example, almost always demands more or less unnatural lighting effects, usually with a definite suppression of the middle range of tonal gradations. Broad comedy frequently impels a reversal of this—greatly exaggerated natural lighting with a minimum of extreme contrasts, and a fairly wide range of intermediate tones.

In general, then, it may be concluded that purely physical tempo in lighting is most frequently expressed through alteration of the visual key of lighting, and by manipulation of the brilliance of the lighting; while the more delicate dramatic tempo is, like mood, revealed more generally through manipulation of the gradational scale, tending to lower tones, with repressed highlights for the slower tempos, and to wider scales for the lighter tempos.

Neither mood or tempo in lighting should be achieved at the expense of the visual coherence of the production as a whole. From the dramatic viewpoint, no individual scene can be considered as independent of the production. Therefore, in normal practice, it is sometimes necessary to sacrifice effects in lighting and composition which would, individually, be effective contributions to visual mood or tempo, but which, viewed in their relation to the greater unity of the production, may prove undesirable. In the same way, it is often necessary to forego effects which would be visually or dramatically potent, in order to maintain some special type of lighting or other treatment necessary to the most favorable presentation of some star or player. In general, however, lighting may not only be closely attuned to the physical and dramatic tempo of a production, but serve as a powerful aid to the direction and acting in creating and maintaining tempo.

Admittedly, this phase of lighting is not so well understood as is lighting for mood or character; but it is one which offers much interest to the analytically-minded cinematographer.



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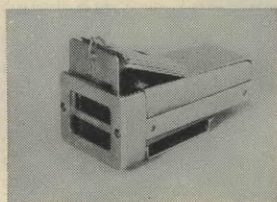
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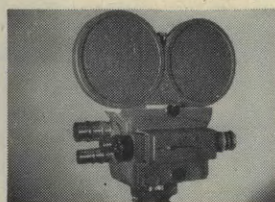
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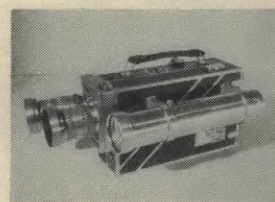
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REAR WINDOW

(Continued From Page 78)

screen, it wasn't clear that the object was a wedding ring. It was obvious that it was a ring, but that was all. Then we made the shot over, using different lighting, and it still wasn't what we wanted. So we finally moved out on the boom and put the 6-inch lens on the camera set at f/5.6. The results were sharp as a tack.

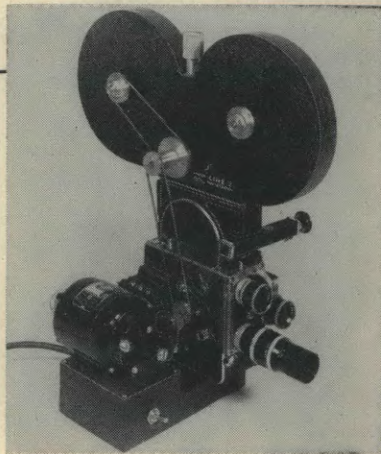
"Here was a story point that simply couldn't be done in any other way, without making it look artificial. An insert just wouldn't do, because all action as we put it on the screen was as seen from Stewart's point of view; it had to have the same pictorial and spacial perspective. In this case, Stewart was viewing the scene through his telephoto-equipped camera. Our aim was to match exactly the same visual perspective he obtained when actually viewing the scene with the aid of his camera."

One of the more interesting things about this production perhaps, is the "pre-lighting" phase in which Burks and his gaffers spent the better part of ten days in planning the illumination and rigging the huge complex set prior to starting to shoot. "If this large composite set had been lighted in the conventional manner," said Burks, "we

would have required over a hundred days in which to complete the picture. I went on the sound stage about ten days prior to the starting date. Using a skeleton crew, we pre-lit every one of the 31 apartments for both day and night, as well as lit the exterior of the courtyard for the dual-type illumination required. A remote switch controlled the lights in each apartment. On the stage, we had a switching setup that looked like the console of the biggest organ ever made! Actually, lighting this composite set was the biggest electrical job ever undertaken on the lot by Paramount—not excepting even Cecil B. DeMille's big spectacle sets. Biggest, that is, in terms of number of electrical units used, amps used, and the number of individual light units and amount of cable laid. At one time, we had every switch on the lot in use on the sound stage.

"With a vast setup of this kind, it was a simple matter to light any portion of the set with the mere throw of a switch or two. Thus if Hitchcock decided to start the day's shooting with action in the salesman-murderer's apartment, we'd simply ask the gaffer to "hit number 37!"

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A big chart was prepared, following the pre-lighting activities, which showed graphically the complete set-lighting plan. It indicated what switches controlled what lights, for either the day or night lighting scheme.

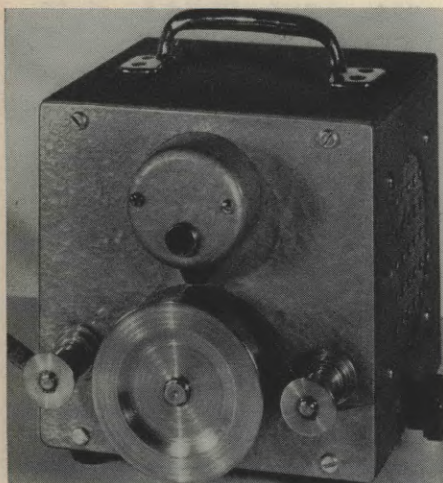
This is not to imply that lighting adjustments were not continually being made as the picture progressed; lighting had to be adjusted frequently to fit certain action. But the basic lighting structure was established—the walls, the effect of light coming through the windows and curtains, etc. When the salesman-murderer went over and sat down in his chair and picked up the telephone, for example, an adjustment might be made in the key light for that position. This would take but a few minutes compared to the time that would be required if the action in each apartment was filmed in the conventional manner, where each had to be lighted separately just prior to shooting.

"In the beginning," said Burks, "we attempted to establish three separate lighting schemes—for day, night, and a 'sunset' lighting. But we soon found that in order to do all this would require setting up a complete pattern of lighting units for each scheme. Obviously this would require more lights than the studio had at its disposal; and besides, there wouldn't be room on the scaffolding and stage for them or the attendant equipment.

"So what we did was to set up the day lighting complete, which could be 'put on' the set simply by throwing a few switches. Then we partially set up the night lighting pattern. For the night shots, we then augmented the night lighting setup by robbing the day lighting of some of its units; this also was true when we required the 'sunset' lighting scheme.

"But 'pre-lighting' did pay off, even though we were not able to carry out the plan as extensively as we would like. Ordinarily, to light a set as extensive and complicated as this would entail from a half to a full day's time. We had it down to a routine where we could change the overall lighting from night to day on the entire set, including the apartment interiors, in about 45 minutes."

Some idea of what this means can be gained when it is considered that there were 70 openings—windows, doors, etc.—in the set. Every apartment across the courtyard was loaded with lighting equipment: lamps, spots, photofloods, gauzes, scrims, etc. This was not just effect lighting but carefully worked out set lighting, because action takes place



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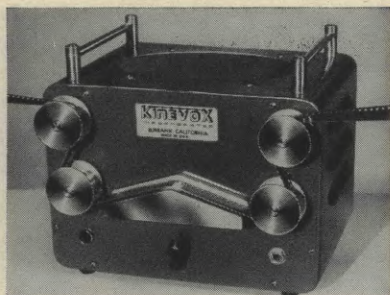
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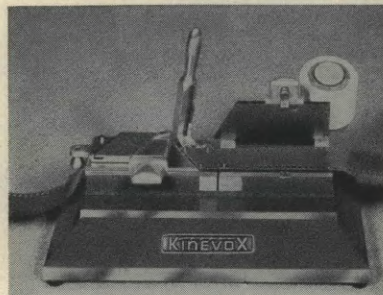
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in almost every apartment or apartment balcony sometime during the story, and in some cases a number of times.

"One of the major problems I encountered," said Burks, "was making the day shots, where action was going on in the apartments. Ordinarily, when one looks at an average apartment window in the daytime, one cannot readily see what is going on inside, even though the room lights are on. When first we lit the apartments for day, they looked 'lighted'—as at night. In other words, when we lit them so you could see action inside, they had the appearance of being over-lighted and thus were unnatural. They looked like shop windows. The problem here was to arrive at a lighting balance where there was enough light inside the apartments to reveal the action, but not enough to make them appear fully lighted as for night. In no case could we use conventional cross-lighting to enhance separation and definition. Moreover, the direction of the lighting within the apartments in the day shots had to look natural—as from daylight coming through the windows.

"There was the additional problems of keeping the light intensity at the

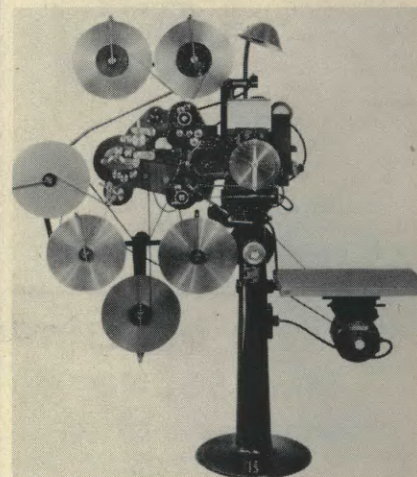
same level no matter how a player moved about in an apartment. Thus if the lighting was set at the right level for a player at the rear of a room, should he walk forward toward the window, he would be 'burned up' by illumination brighter than that outside. We solved this problem by placing graduated scrims just below the light units so that, as the player walked toward the light, the illumination falling on him would be gradually diffused the closer he came to the light."

A glance at the photos of art director Mac Johnson's pre-production sketches of the set will show how the day and night lighting schemes were visualized in advance. They also show the vast scope of the lighting that was necessary in order to give the set the authenticity of a large area of one of New York City's most interesting communities. It required the genius of a man of Burks' extensive photographic experience to impart this authenticity to the sky backings, the distant structures, the facades of the apartments, and to the interesting courtyard where so much of the critical action takes place, and of course, to the apartment interiors themselves.

At the time pre-lighting of the set was taking place, a comprehensive chart of distances and focusing was prepared

New!

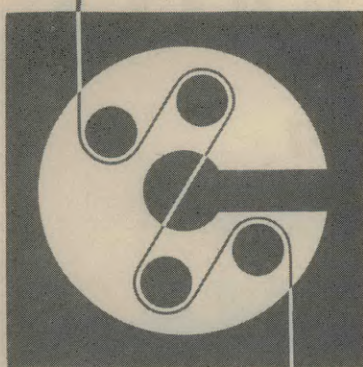
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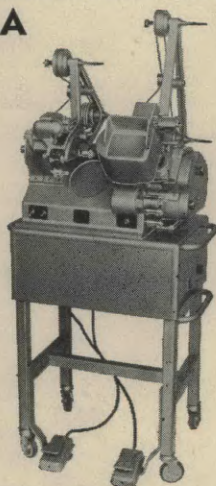
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for the camera assistants. A study of the illustrations will show that it would have been impractical to run a tape from Stewart's window (the basic camera position) to any one of a number of points where action was to take place across the courtyard, just before starting to shoot. Instead, all measurements were made at one time and noted on the chart. Thus when it came time to shoot the salesman-murderer, say, standing beside his bed, a glance at the chart showed the exact distance from camera to player. This was all the more important when one realizes that, using a telephoto lens on most of the shots, depth of field was extremely shallow.

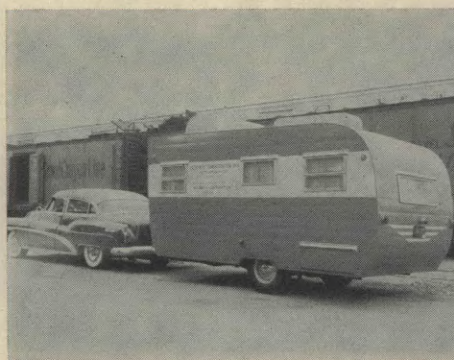
"I got quite a kick out of Lennie South, my assistant, who has been with me for many years," said Burks. "He was telling me that it was the first time in his career as a camera assistant that he changed focus from 50 to 51 feet!" But in this case, such minute changes in focus were vital, for in some cases if a player, photographed from a distance of 70 feet, was to move back just a half a

step, focus had to be adjusted accordingly—an example of the fine tolerances with which Burks and his crew had to work.

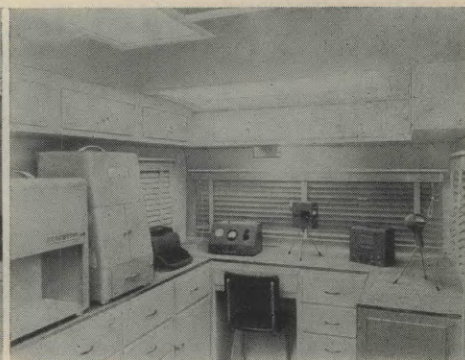
And now we come to what was, perhaps, the most imaginative and meticulous phase of the photography of "Rear Window"—the continuous, non-stop introductory shot, which establishes the locale and identifies the principle characters in the story. Not in the memory of Hollywood's oldest cinematographer was there ever an introduction shot filmed on a sound stage which revealed so much in just 250 feet of film exposed in one continuous take.

In this shot, the camera opens on a closeup of a thermometer near Stewart's open window, which indicates it is a hot summer's day. The camera then moves out through the window and approaches the apartment across the courtyard to introduce all of the interesting characters who live there and who play an important part in the story. The camera continues on its revealing jour-

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Equipment of interest to the motion-picture industry and to professional photographers are such PR products as the Spectra color temperature meters;

the Spectra spot meter for evaluating brightness of motion picture screens, Spectra color densitometer, and the Norwood Model A Director exposure meter.

In the industrial and farming field the company supplies lighting equipment and light filters to produce a controlled artificial equivalent of natural daylight. Still other equipment enables textile and canning industries to grade their products according to color in a fraction of the time formerly required by other methods.

Most of the PR products relating to photography are presently in use by Freund in the production of the "I Love Lucy" and "Our Miss Brooks" television film shows, which Freund photographs for Desilu Productions, Hollywood.

ney and finally returns to Stewart's window, where it shows him asleep. Moving in to a big closeup, it shows perspiration trickling down his face. The camera pans down to Stewart's cast-encased leg; it shows the inscription: "Here lie the broken bones of L. B. Jeffries"—thus revealing his name. The camera moves on to show a broken press camera on a nearby table; pans up to a photo which shows two racing cars in a mid-air crash on the Indianapolis speedway—the wheel of one car, torn loose, coming directly at the camera. This explains how Stewart's leg was broken. The camera moves on to a series of still other photos: Korean war scenes, fires, etc., which serve to reveal that the occupant of the apartment is a professional news picture photographer.

The camera continues its probing; it shows a wide assortment of the photographer's equipment. It comes to rest above a light box on which rests a large photo negative of a girl—a cover shot; then it pans to a pile of magazines, and on the cover of the top magazine we see reproduced the photo made from the negative shown earlier.

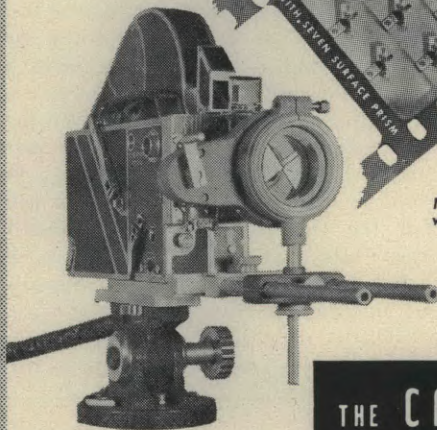
At this point it is pretty well established that Stewart is a news photographer laid up with a broken leg suffered in line of duty; that it is a very

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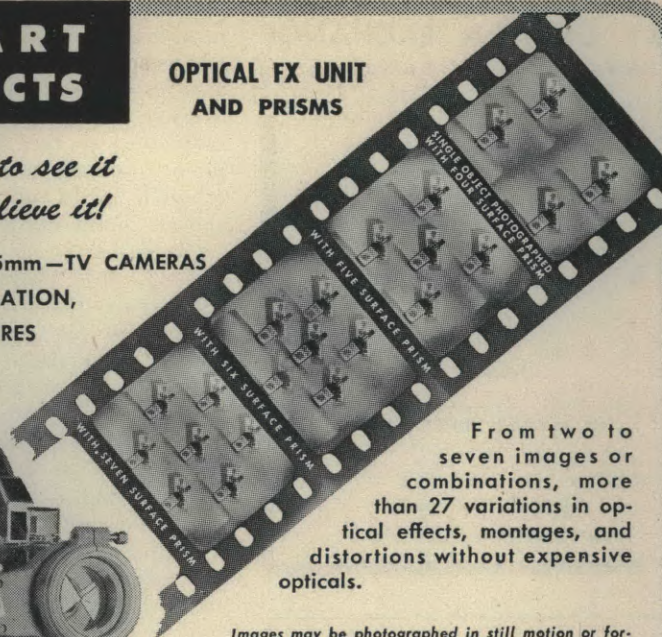
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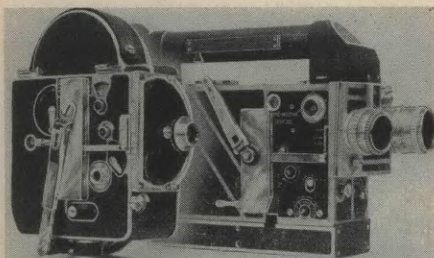
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hot day, and that he lives in an apartment building surrounded by others where some very interesting characters also reside. From this, there is an abrupt dissolve to the editorial offices of the magazine, as the editor picks up the phone and calls Stewart. Until now, not a single word of dialogue has been spoken in the entire shot.

"It was a terrific routine to plan and execute," said Burks. "We mounted the camera on the biggest boom on the Paramount lot, augmented by an extension. The chassis of the crane was moved by grips according to plan. It required a great many rehearsals to enable all concerned to familiarize themselves with the routine, and the cues, etc. We laid out the whole thing one afternoon and completed the rehearsals; then the next day we shot it. We made ten takes before we finally got everything just as we wanted it. We spent half a day shooting. It was well worth all the time and effort. We couldn't have told that much of the story in a whole day's shooting, using conventional methods."

The routine involved a great many, if not almost continuous changes in fo-

cus, said Burks. As a guide for the assistant handling the focusing, a chart was prepared which showed the focal distance from a given point at Stewart's window. We remarked that Burks must have had a pretty sharp crew to handle all the details necessary to executing such a shot so effectively. "I've got the best camera crew in the business," he replied. Burks also mentioned the great cooperation of director Alfred Hitchcock which he credits for making it possible for him to achieve the photographic results he did on "Rear Window."

"I don't think that a picture like this could be done anywhere near as well if it wasn't for 'Hitch' and his complete understanding of technical problems, and his ability and willingness to adjust things within reason to suit any technical problems encountered," Burks added.

"Rear Window" is the fourth film Burks has photographed for Hitchcock. He will shortly go to France to photograph Hitchcock's next picture, "Catch a Thief"—a Paramount production also, starring Cary Grant.

MAGNETIC SOUND FOR ANY PROJECTOR

(Continued From Page 91)

panel were used, employing extended machine screws.

The 8-tooth sprocket gear shaft was lengthened, as previously described, so that it extended through the recording panel as required. On this was mounted the 8-tooth sprocket which pulls the magnetic sound film (double-perforated 16mm oxide coated sound film slit in half). Unlike the previously described combination, here both the projector and playback mechanism are driven by the projector's constant speed motor.

Placement of other components of the playback unit on the panel (Fig. 5) is much the same as in the construction of the recorder unit, and since these details were fully described last month, they will be omitted here. Suffice it to say that the tape proceeds past a tension inducing unit, past the sound head, over a flywheel, and thence over the curved dampener that filters out any vibration in the film movement. From here it proceeds to the drive sprocket and on to the takeup reel, which is driven by spring belt extending from a grooved pulley mounted on the extended drive shaft.

This modification project was based on the assumption that I would be able to play back the recorded signals through the Model UA Ampro projector's sound system. To do this how-

ever, it was necessary to expand the capacity of the projector amplifier by adding another tube to the circuit. The resulting volume and sound quality is satisfactory, even for use in a good-sized auditorium.

Here a word of caution is necessary for others who may wish to adapt a sound projector of this type to magnetic sound, as described above: because the magnetic playback head has a tendency to pick up some noise of the motor, it is important to place the head—when constructing the panel—as far away from the projector motor as feasible. As may be seen in Fig. 5, the head (the square object to left of flywheel) was mounted at the very top of the panel, which was as far from the motor as it was possible to get in order to reduce pickup of motor noise to a minimum.

This outfit was designed to take 800-foot reels of recording film; even larger reels can be accommodated simply by lengthening the reel arms.

Out of all this experimentation, designing, and re-designing has finally evolved my latest adaptation—that of the modern Premiere Model 30 Ampro sound projector, shown in Fig. 3. Here the playback unit for magnetic sound film (circled in photo) was mounted on the projector in a manner similar to that on the earlier Model UA, except

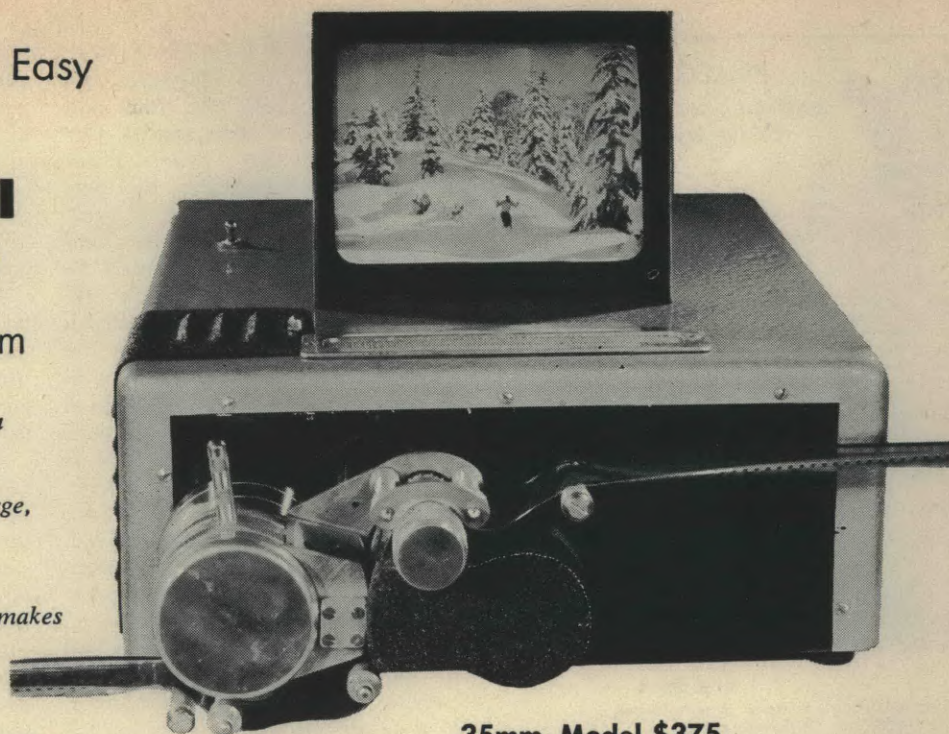
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that this is a more refined job. Actually, there is no difference in the design of the mechanism used in the modifications pictured in Figs. 3 and 4. The workmanship in the former is perhaps a little better, the finish more professional, and the flywheel has been mounted in back of the panel instead of the front, as in Fig. 5.

The nicest part of the Model 30 installation is that there is sufficient gain in the projector amplifier to play back the magnetic film recordings. The lead from the playback sound head is simply plugged into the microphone input of the projector. Ample volume is provided for average use in the home or small club room; but where the equipment is to be used in large auditoriums, it probably would be necessary to add an extra tube to the amplifier, or perhaps a pre-amplifier to boost the sound volume.

Another good feature is the fact that the motor of the Premier Model 30 is better shielded than that on the Model UA, with the result the magnetic head picks up little if any of the motor noise.

Another adaptation which I have purposely left for description until now, is pictured in Fig. 2. This involved a Bell & Howell 16mm projector instead of an Ampro, and the system of coupling between projector and the playback

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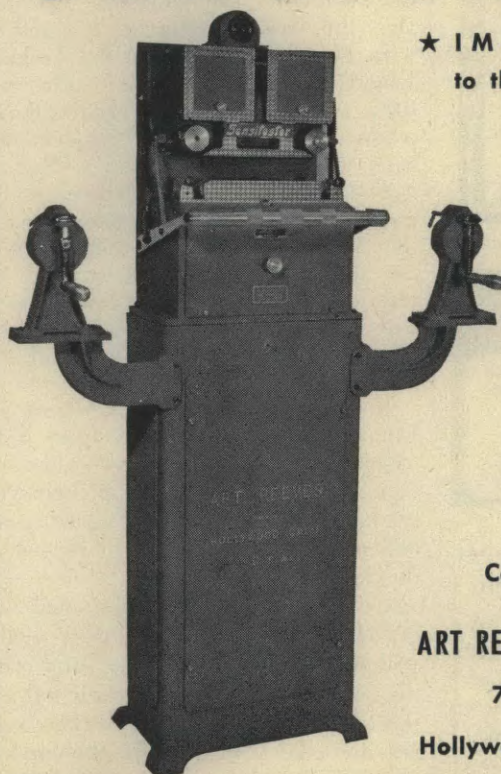
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mechanism is perhaps simple enough for adaptation by those who own projectors of other makes, both 8mm and 16mm. As with the other outfits, this adaptation requires that a typical home tape recorder be employed as the electronic amplifying unit.

As shown in the illustration, the sound film transport mechanism mounted on a panel is placed on top of a box "B" having the same height as the Brush Model 401 tape recorder. Inside the box is a gear arrangement leading to a shaft which extends outside. Coupled to this is a flexible shaft which leads to the projector and which in turn is connected to the threading knob shaft.

Here the complete Brush recorder unit is employed, including the head, with the magnetic film traveling a devious route from the Brush supply spool, to and through my playback mechanism, and thence back to the Brush head and takeup spool. The gear box assembly is driven by the Bell & Howell projector, which thus drives and maintains the speed of both sound and picture film

at 16 fps. This type of adaptation makes unnecessary any alterations to the projector, such as new shafts, drilling holes in the chassis, etc., and is probably one of the simplest methods to employ for either 8mm or 16mm projectors—where the projector owner also has a 1/4-inch tape recorder to provide the electronics component of the outfit.

Perfect synchronization is easily established and maintained by carefully threading both the sound and picture films according to prepared sync marks, so that they start moving in sync right from the start.

The simplicity with which magnetic recording and playback apparatus can be coupled to either camera or projector for the purpose of providing lip-sync sound, is creating widespread interest among enterprising amateur movie makers everywhere. The author will be glad to answer questions and to assist interested readers undertaking similar projects. Queries should be addressed to George W. Cushman in care of **AMERICAN CINEMATOGRAPHER**.

WALT DISNEY'S NATURALIST-CINEMATOGRAPHERS

(Continued From Page 75)

sing, Cecil Rhode, Fred Machetanz, Dick Bird, and Ernst Heiniger.

There are also four man-and-wife teams: Alfred and Elma Milotte, renowned for major contributions to Disney's Academy Award-winning "Seal Island" and "Beaver Valley;" Herb and Lois Crisler, currently filming grizzly bear for "The Northern Tundra;" Dr. Olin Sewall Pettingill, Jr., and his wife Eleanor who are on the Falkland Islands lensing penguins and other bird life; and Herbert and Trudie Knapp whose meticulous 16mm color footage soon will be seen in Disney's "Siam."

Every "True Life Adventure" assignment brings its personal adventures to the Disney wildlife photographers in the field. Encounters with animals and reptiles often pose imminent hazards and hardships inseparable from the self-imposed tasks of this unusual calling.

In Africa the Milottes, Alfred and Elma, Disney's veteran "True Life" camera team, have for two years been facing lions and elephants in their wildest haunts to get the most amazing record of savage beasts yet to be put on movie screens.

Using their specially-constructed camera car, the Milottes stalk their quarry without killing or harming, and when they get within range of their subject, they film it with a 16mm Arriflex camera mounted with a Kilfit 16-inch telephoto lens. Most of the film exposed

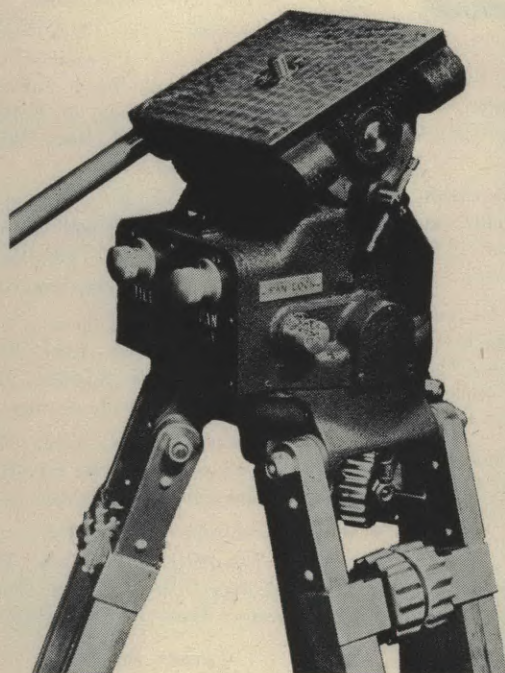
by the Milottes is Commercial Kodachrome. The only time they use Kodachrome Type A or Regular is when they encounter some unusual light condition. Their camera car consists of a steel-armored all-purpose cab mounted on a Dodge heavy-duty four-wheel drive chassis. It is complete with living quarters and camera lab. The material they have gathered will soon be seen in Disney's "The Elephant Story," and "The King of Beasts."

Stuart V. Jewell is one of the two noted time-lapse cinematographers contributing rare material in 16mm color for Disney's "Secrets of Life." The camera he uses in getting closeups of high magnification looks something like a mysterious new artillery piece. It is a Cine Kodak Special mounted with a 16-inch telephoto on a unique focusing mount. Long an expert on bee lore, Jewell is now filming the marvels of honey making and pollenization in collaboration with other cameramen. Elsewhere he is pictured beside his camera, wearing the padded suit and glass face mask which protect him from bee stings when working close to his subjects.

John Nash Ott, Jr., whose time-lapse photography laboratory in Winnetka, Ill., is the largest in the world, has provided Disney with many unusual close-range studies for his films. His interval camera exposures in "Nature's Half Acre" were a standout feature.

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Ott is again at work filming unusual floral and microcosmic scenes for "Secrets of Life."

The other collaborator-cameramen previously named all have similar backgrounds and experiences. One naturally wonders how Walt Disney gathered together such a formidable corps of nature-scientist-cameramen. It began years ago when he was planning to extend his activities to the production of educational films. One of the first 16mm cameramen whose work came to his attention was Alfred Milotte who, together with his wife Elma, had concentrated photographic activities to Alaska and the Canadian Northwest. Disney sent the husband-wife team back to Alaska to gather material for a feature length film. When the Milotte's color footage began to arrive, Disney was so impressed with it he decided that instead of a feature-length production, he would make a series of short subjects on wild life. He turned the rolls of color film over to his staff which ultimately put together "Seal Island," the initial subject in Disney's "True-Life Adventure Series." The film won an Academy Award in 1948.

As Disney's plans for the "True-Life Adventures" began to take more solid form, he saw need for developing a comprehensive source of film ma-

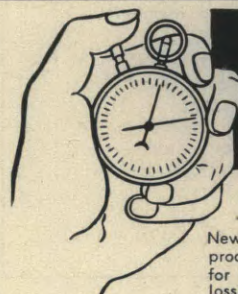
terial, and this culminated in seeking out the nation's leading naturalist and science cinematographers and evaluating their work. Obviously, it would be impractical to put all these men under contract as a staff of cinematographers. Instead, as the Disney staff develops ideas for films, the most suitable cameramen are assigned to bring in the necessary subject matter on 16mm color film.

These men do not work from a script, although there is a general discussion of what the studio wants before the men are sent into the field. Each knows from long study of the subjects completed to date the "slant" desired, and the cameramen must have the editing sense and the imagination to visualize what will make the sort of dramatic or comedy situations which the artful Disney staff weaves, using film, narration, and clever background melody.

While Walt Disney never advertises for cameramen, others having the experience and the imagination required in this specialized field are expected to join in adding luster to "True-Life Adventures," and "People and Places"—newest Disney series.

When the Disney cameramen go afield in search of likely material, they are on their own. Their success depends

(Continued On Page 109)

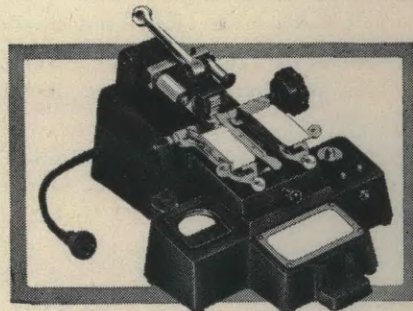


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Current Assignments of A.S.C. Members

Major film productions on which members of the American Society of Cinematographers were engaged as directors of photography during the past month.

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COLUMBIA

- BURNETT GUFFEY, "The Human Beast," with Glenn Ford, Gloria Grahame, Brod Crawford, Kathleen Case, Fritz Lang, director.
- LESTER WHITE, "The Killer Wore A Badge," with Fred MacMurray, Phil Carey, Richard Quine, director.
- CHARLES LAWTON, JR., "Three Hours To Live," (Technicolor), with Dana Andrews, Donna Reed, Dianne Foster, Al Werker, director.
- HENRY FREULICH, "The Law vs. Billy The Kid," (Technicolor) with Scott Brady, Betta St. John, William Castle, director.

METRO-GOLDWYN-MAYER

- GEORGE FOLSEY, "A Bride For Seven Brothers," (Technicolor, CinemaScope) with Jane Powell, Howard Keel, Jeff Richards, Julie Newmeyer, Tommy Ralls, Russ Tamblyn, Marc Platt, Stanley Donen, director.

- ROBERT SURTEES, "Valley Of The Kings," (Technicolor; wide-screen) with Robert Taylor, Eleanor Parker, Carlos Thompson, Kurt Kasnar, Robert Pirosch, director.

- JOSEPH RUTTENBERG, "Brigadoon," (Technicolor; wide-screen) with Gene Kelly, Van Johnson, Cyd Charisse, Elaine Stewart, Virginia Bosler, Vincente Minnelli, director.

- PAUL C. VOGEL, "The Student Prince," (Ansco Color; CinemaScope) with Ann Blyth, Edmund Purdom, John Ericson, Louis Calhern, Edmund Gwenn, S. Z. Zakall, Richard Thorpe, director.

- FREDDIE YOUNG, "Betrayed," (Technicolor; wide-screen) with Clark Gable, Lana Turner, Victor Mature, Louis Calhern, Richard Anderson, Gottfried Reinhardt, director.

PARAMOUNT

- ROBERT BURKS, "Rear Window," (Eastman Color; wide-screen) with James Stewart, Grace Kelly, Wendell Corey, Sara Berner, Thelma Ritter, Raymond Burr, Judith Evelyn, Ross Bagdasarian, Marla English, Alfred Hitchcock, producer-director.

- LOYAL GRIGGS, "The Bridges of Toko-Ri," (Eastman Color; wide-screen) with William Holden, Grace Kelly, Mickey Rooney, Fredric March, Robert Strauss, Mark Robson, director.

REPUBLIC

- JACK RUSSELL, "Tobor," (Dudley Prods.; wide-screen) with Charles Drake, Karen Booth, Arthur Shields, Billy Chapin, Lee Scholom, director.

R.K.O.

- HARRY WILD, "The Big Rainbow," (Technicolor) with Jane Russell, Gilbert Roland, Richard Egan, Lori Nelson, Robert Keith, Joseph Calleia, John Sturges, director.

- NICK MUSURACA, "Susan Slept Here," (Technicolor) with Dick Powell, Debbie Reynolds, Anne Francis, Alvy Moore, Glenda Farrell, Les Tremayne, Rita Johnson, Benny Rubin, Frank Tashlin, director.

20th CENTURY-FOX

- LUCIEN BALLARD, "The Raid," (Panoramic Prod.; Technicolor) with Van Heflin, Anne Bancroft, Richard Boone, Tommy Rettig, John Dierkes, Peter Graves, Jimmy Best, Hugo Fregonese, director.

- LLOYD AHERN, "The Gambler From Natchez," (Panoramic Prods.; Technicolor) with Dale Robertson, Debra Paget, Kevin Mc-

Carthy, Thomas Gomez, Lisa Daniels and Douglas Dick, Henry Levin, director.

- MILTON KRASNER, "Garden of Evil," (Technicolor, CinemaScope, shooting in Mexico) with Gary Cooper, Susan Hayward, Henry Hathaway, director.

UNIVERSAL-INTERNATIONAL

- IRVING GLASSBERG, "The Black Shield of Falworth," (Technicolor; CinemaScope) with Tony Curtis, Janet Leigh, David Farrar, Barbara Rush, Herbert Marshall, Ian Keith, Dan O'Herlihy, Craig Hill and Rhys Williams, Rudolph Mate, director.

- RUSSELL METTY, "Sign of the Pagan," (Technicolor; CinemaScope) with Jeff Chandler, Jack Palance, Ludmilla Tcherina, Rita Gam, and Jeff Morrow, Douglas Sirk, director.

- CARL GUTHRIE, "Dawn At Socorro," (Technicolor; wide-screen) with Rory Calhoun, Piper Laurie, David Brian, Kathleen Hughes, Alex Nicol, George Sherman, director.

- CLIFFORD STINE, "This Island Earth," (Technicolor; wide-screen) with Bart Roberts, and Faith Domergue, Joe Newman, director.

- MAURY GERTSMAN, "Bengal Rifles," (Technicolor; wide-screen) with Rock Hudson, Arlene Dahl, Dan O'Herlihy, Torin Thatcher, Michael Ansara, Laslo Benedek, director.

WARNER BROS.

- SAM LEAVITT, "A Star Is Born," (Technicolor; CinemaScope) with Judy Garland, James Mason, Jack Carson, Charles Bickford, Tom Noonan, and Jack Pepper, George Cukor, director.

- WILFRID CLINE, "Lucky Me," (WarnerColor; CinemaScope) with Doris Day, Robert Cummings, Phil Silvers, Eddie Foy, Jr., and Nancy Walker, Jack Donohue, director.

- ARCHIE STOUT, "The High and the Mighty," (Wayne-Fellows Prod.; WarnerColor; CinemaScope) with John Wayne, Claire Trevor, Lorraine Day, Robert Newton, Phil Harris, David Brian, Paul Kelly, Sidney Blackmer, William A. Wellman, director.

- PEVERELL MARLEY, "The Talisman," (WarnerColor; CinemaScope) with Virginia Mayo, Rex Harrison, George Sanders, Laurence Harvey, Robert Douglas, David Butler, director.

INDEPENDENT

- ERNEST LASZLO, "Bronco Apache," (Hecht-Lancaster Prods.; Technicolor; wide-screen) with Burt Lancaster, Jean Peters, John McIntire, Monte Blue, Charles Buchinsky, and Paul Guilfoyle, Robert Aldrich, director.

- JOHN ALTON, "Four Desperate Men," (Bogaus Prods.; Eastman Color; Scenic-Scope) with John Payne, Elizabeth Scott, Dan Duryea, Dolores Moran, Allan Dwan, director.

- JACK CARDIFF, "The Barefoot Contessa," (Figaro Prods.; Technicolor; shooting in Italy) with Humphrey Bogart, Ava Gardner, Edmund O'Brien, Valentina Cortessa, Marius Goring, and Bessie Love, Joseph L. Mankiewicz, producer-director.

TELEVISION

(The following directors of photography were active last month in photographing films for television in Hollywood, or were on contract to direct the photography of television films for the producers named.)

• LUCIEN ANDRIOT, "The Life of Riley" series of half-hour comedy-dramas for Hal Roach Studio Prods., starring William Bendix. (NBC.)

• JOSEPH BIROC, "The Lone Wolf" series of half-hour dramas for Gross-Krasne, Inc., California Studios, (UTP).

• NORBERT BRODINE, "Letter To Loretta" series of half-hour dramas for Lewisor Prods.—D.P.I., starring Loretta Young. (Procter & Gamble), RKO-Pathe studio.

• DAN CLARK, "Cisco Kid" series of half-hour western dramas; also "I Led Three Lives" series of half-hour dramas, starring Richard Carlson, for Ziv-TV Corp., California Studio.

• EDWARD COLMAN, "Dragnet" series of half-hour dramas, starring Jack Webb, for Mark VII Prods., Walt Disney Studio. (Chesterfield.)

• ROBERT DEGRASSE, "Make Room For Daddy" series of half-hour comedies starring Danny Thomas for Marterto Prods., Inc., D.P.I., Motion Picture Center. (ABC.)

• GEORGE DISKANT, "Four Star Playhouse" series of half-hour dramas, featuring various stars, for Four Star Productions, RKO-Pathe Studio. (Singer Sewing Machines.)

• KARL FREUND, "I Love Lucy" series of half-hour comedies starring Lucille Ball and Desi Arnaz, for Desilu Productions; (Philip Morris) also "Our Miss Brooks" series of half-hour comedies, starring Eve Arden, also for Desilu Productions, (General Foods) at Motion Picture Center.

• FRED GATELY, "Big Town" series of half-hour mystery-dramas for Gross-Krasne Productions, California Studio. (Lever Bros.)

• JACK GREENHALGH, series of half-hour religious films for Family Films, KTTV studios.

• RUSSELL HARLAN, "Playhouse of Stars" series of half-hour dramas featuring various stars, for Meridian Pictures, Inc., Samuel Goldwyn Studios. (Schlitz).

• BENJAMIN KLINE, "General Electric Theatre" series of half-hour dramas for Bing Crosby Ent., Eagle-Lion Studios. (Gen. Elec.)

• JACK MACKENZIE, "The Hank McCune Show" series for Video Pictures, Inc.

• WILLIAM MELLOR, "Adventures of Ozzie and Harriet" series of half-hour comedy dramas starring Ozzie Nelson and Harriet Hilliard for Stage Five Prods., Inc., General Service Studios. (ABC).

• VIRGIL MILLER, "You Bet Your Life," weekly half-hour audience participation shows, featuring Groucho Marx, for Filmcraft Prods., NBC Studios. (DeSoto-Plymouth).

• HAL MOHR, "The Joan Davis Show" series of half-hour comedy-dramas starring Joan Davis for Joan Davis Enterprises, General Service Studios. (NBC).

• KENNETH PEACH, "Mr. and Mrs. North" series of half-hour dramas starring Barbara Britton and Richard Denning for John W. Loveton Productions, Samuel Goldwyn Studios. (Revlon, and Congoleum-Nairn).

• ROBERT PITTACK, "Private Secretary" series of half-hour comedy dramas starring Ann Sothern and Don Porter, (Lucky Strike); also "Cavalcade of America" series of half-hour dramas, for Jack Chertok Prods., General Service Studios.

• GUY ROE, alternating with Walter Streng on the "Rocky Jones, Space Ranger" and "Waterfront" series of half-hour dramas for Roland Reed Productions, Hal Roach Studios.

• MACK STENGLER, "Life With Elizabeth" series of half-hour dramas; also "The Liberace Show," half-hour musical film series for Snader Telescriptions Corp.

• HAROLD STINE, "Cavalcade of America" series of half-hour dramas for Jack Denove Prods., Inc., Samuel Goldwyn Studios. (DuPont).

• WALTER STRENGE, "My Little Margie" series of half-hour comedies, starring Gale Storm and Charles Farrell (Scott Paper Co.); also "Rocky Jones—Space Ranger" series of half-hour science-fiction dramas starring Richard Crane and Sally Mansfield (UTP); also "Waterfront" series of half-hour dramas starring Preston Foster and Lois Moran (UTP) at Hal Roach Studios.

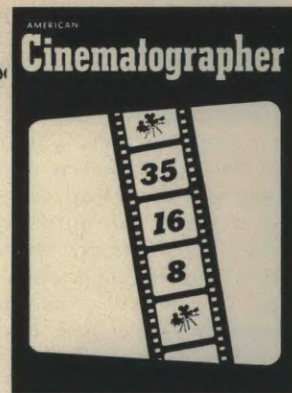
• STUART THOMPSON, "Topper" series of half-hour comedies starring Anne Jeffreys and Robert Sterling for Loveton-Schubert Prods., Goldwyn Studios. (Camels).

• PHIL TANNURA, "The Burns and Allen Show" series of half-hour comedies starring George Burns and Gracie Allen, for McCadden Corp., General Service Studios. (Carnation Milk and Goodrich).

• GILBERT WARRENTON, "Chevron Theatre" series of half-hour dramas featuring various stars, for Revue Productions, Republic Studios.

• HAROLD E. WELLMAN, "Mr. Sun" series of half-hour dramas. (Bell Telephone Co.).

Hal Roach, veteran theatrical film producer who shifted to TV film making, recently told the National Assn. of Radio and Television Broadcasters that all of his TV films are now being shot in color, although they are being released now only in black-and-white.



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NEW ARRIFLEX CAMERAS

(Continued From Page 81)

tical damping techniques have been embodied in its construction. The internal walls are lined with seven layers of foam plastic and sheet lead over which is applied a lining of attractive corduroy velvet. All doors are sealed with foam rubber gaskets, and are secured by means of heavy, "knee-action" clamp locks. Even the camera base within the blimp is cushioned.

The important reflex viewing feature of the camera continues functional after the camera is mounted in the blimp. The regular cover and optical system is removed from the camera, and replaced with a special cover which connects to the unique optical viewing system built into the blimp. Follow-focus is then accomplished by means of either of two controls which are located at the side

and at the rear (D and E in Fig. 3). These are linked directly to the focusing mount of any lens when set in "taking" position. No gears are required around the lens mounts.

A feature which elicited favorable comment from many Hollywood cameramen during the November preview showing, was the oversize focusing scale linked with the taking lens and which may be viewed from a generous-sized window at the side of the blimp. This is a white celluloid band (F in Fig. 3) which covers a rotating, circular mounting in front of the blimp. Prior to filming, it is linked up with the lens and calibrated to correspond with the lens by marking the f/ stops in pencil or ink on the celluloid band. A separate focusing band is calibrated for each lens.

Other observation windows are conveniently located in the blimp to permit viewing the footage counter, and checking the tachometer (B and C in Fig. 2). The lens window on front of the blimp is made of optically flat glass, and shielded by the detachable matte box.

Convenient and easy carrying of the blimp is afforded by two heavy-duty handles. A finger-tip dial (A in Fig. 2) permits the operator to move the camera mechanism (to open the shutter) for preliminary focusing through the lens. A hook is provided at a point corresponding with the film plane for attaching a measuring tape. And a noteworthy feature is a pulsating light at the side of the blimp which indicates when the camera is in operation—a necessary adjunct in view of the great silencing qualities of the blimp. Combined weight of the blimp and camera (with lenses and sync motor unit) is approximately 55 pounds.

As for the Arriflex 16mm camera, already this camera is finding increasing use throughout the motion picture industry. A great deal of the color film which makes up Walt Disney's Academy-Award contender, "The Living Desert," was shot with a 16mm Arriflex. The new, revolutionary Arriflex "16" (Fig. 5) is said to be the only 16mm camera with a mirror reflex shutter. This affords the same continuous through-the-lens focusing and viewing that is an outstanding feature of the Arriflex 35mm camera.

Perhaps the most noteworthy features of the "16," in addition to the reflex shutter are the divergent 3-lens rotary turret, registration pin, and unique motor drive. The turret accommodates lenses from 11.5mm extreme wide angle to the longest telephotos—both of which can be mounted simultaneously without mechanical or optical interference. Lenses are quickly interchangeable.

Aircraft Analyses Recording with Dual Cameras



WITH THESE two cameras, cinematographer Don King shoots 25,000 feet of film a year.

HOW WOULD YOU like to photograph 10 feature-length motion pictures that nobody looked at?

That, slightly exaggerated, is the plight of Don King, cameraman for Chance Vought Aircraft, who the past year shot enough film on every takeoff and landing of Navy-Vought F7U-3 Cutlass jet at its Dallas, Texas plant to make 10 feature films.

King records the plane action on both 35 mm and 16mm film using two cameras on an ingenious tandem mount atop the 50-foot control tower of the company's landing field. One is a Bell & Howell Eyemo model 71-Q equipped with 12-inch and 20-inch telephoto lenses. Mounted alongside it is a smaller 16mm GSAP gun camera with a 6-inch

telephoto lens, doubling coverage of the event.

Some 25,000 feet of film is shot annually by King in this operation. Pilots may check the footage in studying their technique of handling the speedy fighter plane, while company engineers can analyze it for data on rudder position, angle of speed brakes, wing slats and angle of attack of plane.

The two cameras are mounted on a single swivel base for ease in tracking planes in flight. Instead of a photographic viewfinder, a reflex gunsight is used, affording quicker aiming and tracking. To get sharper pictures, the opening of the shutters in the cameras—normally about 170°—was reduced to 10° and 20°.

The registration pin is a feature generally found only in motion picture cameras selling above \$3000. The pin in the 16mm Arriflex automatically engages and locks the film in place during each exposure, and thus insures absolute frame registration and picture steadiness.

With the compact, built-in electric motor drive there is never a need to stop filming to wind a spring. The variable speed 6-volt DC motor operates either forward or in reverse. It is operable from either a portable, rechargeable battery pack; dry cell batteries; or with transformer-rectifier from 115-volt AC. This motor is readily interchangeable with a synchronous motor unit, which will be available as an accessory.

There are still other noteworthy professional features incorporated into the design of the Arriflex "16," which weighs only 7½ pounds, complete with matte box. These include footage and frame counters, which count accurately in both forward and reverse action; a tachometer which indicates speeds from

1 to 50 frames per second; and a contour grip for the camera which provides a natural and firm grip for handheld shooting. Film capacity of the camera ranges from 50 feet to 400 feet; it will take the standard 50-ft. and 100-ft. daylight loading spools. The external film magazine, soon to be made available as an accessory, will accommodate 400-foot rolls of film. The single-sprocket drive permits use of either single or double-perforated film.

The camera boasts as standard equipment one of the most efficient detachable matte box and filter holders yet designed for a 16mm camera. This has both stationary and rotating filter stages for color filters, polarizing filters, and for making fades, dissolves and other matte box effects.

Both the 16mm and the 35mm Arriflex cameras and accessory equipment are now being demonstrated by Kling Photo Corporation at its New York City headquarters, 235 Fourth Avenue, and at its Hollywood office at 7303 Melrose Avenue.

WALT DISNEY'S NATURALIST-CINEMATOGRAPHERS

(Continued From Page 105)

in some measure on luck but more often on patience, the ability to discern a likely subject or a bit of interesting action and get it on film before it escapes; plus the possession of the imagination and continuity-sense that is a must for every good movie maker.

Over a score of communities are on the "People and Places" schedule. The program looks years ahead. The intent is to release at least two subjects annually. Length will depend upon the subject.

The camera visits will report in friendly fashion the intimate home life, the tribal and group activities and picturesque festivities of our global neigh-

bors. These features will go far beyond the conventional travelogue. The cinematographers will be resident, familiar with the region and its citizens, its traditions and history. One of their main concerns will be to accurately trace ancient customs and folk ways forward into the present life and manners of a people. To make certain that their photographers thoroughly understand this viewpoint, Disney representatives recently made a tour of Europe from Stockholm to the Mediterranean, contacting top craftsmen in many areas. Further survey is planned as the itinerary becomes active in other regions around the world.

WHAT'S NEW

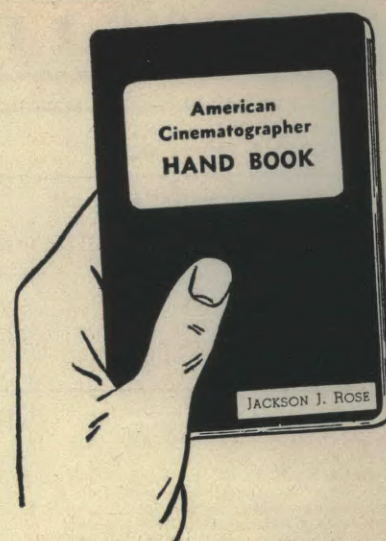
(Continued from Page 68)

super-sensitive photoelectric cell. The "pocket-watch" type meter is well-known both for its diminutive size and light-weight (only 3 ozs.) and its quick-reading features. It is calibrated for ASA and Weston film speeds; covers a full range of exposures from 1/1600 sec. to 4 minutes; and diaphragm stops from f/1.5 to f/22. Retail price is \$24.95.

New Projector Data—Readers of *American Cinematographer* interested in securing latest technical data on the new series of Pageant 16mm sound projec-

tors offered by Eastman Kodak Company, are invited to write the company for special descriptive brochure No. 2-11. Address the manufacturer at Rochester 4, New York, mentioning *American Cinematographer*.

Film Trailers and Titles—Filmack Trailer Co., 1327 So. Wabash Ave., Chicago 5, Ill., offers mid-continent film producers prompt service in 16mm and 35mm film trailers, titles, TV spots, and animation.



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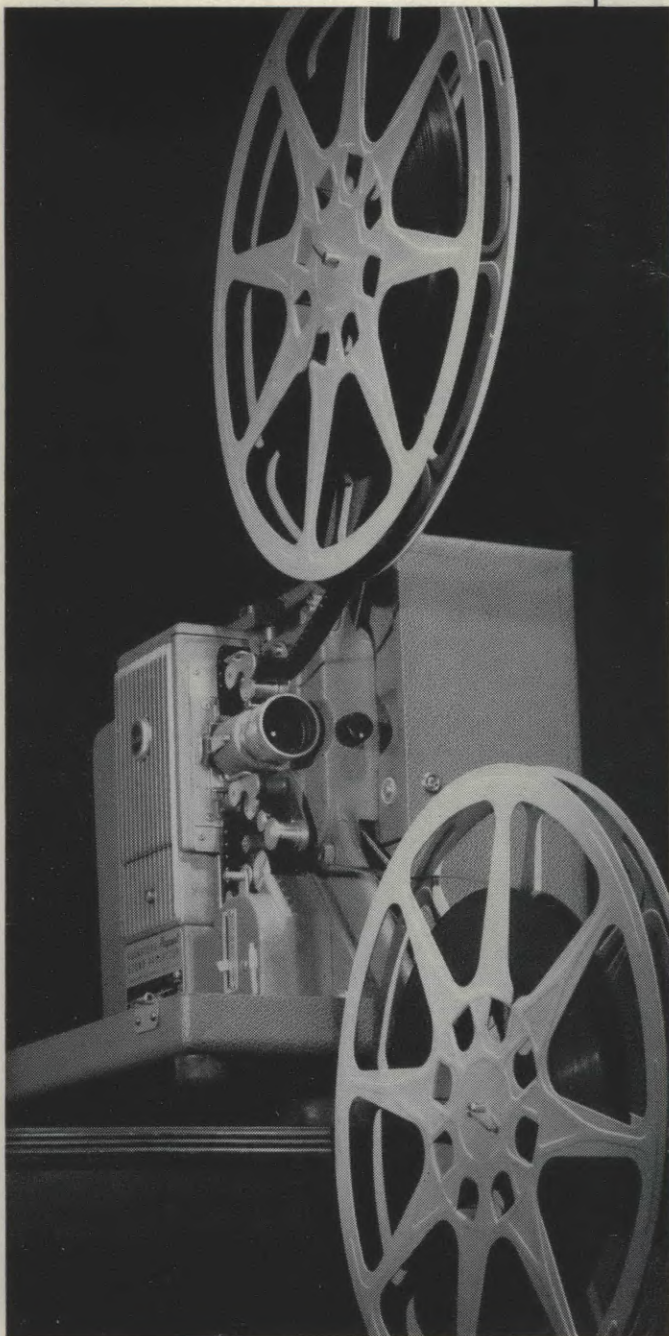
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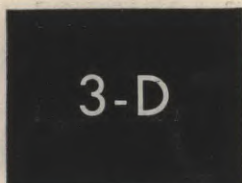
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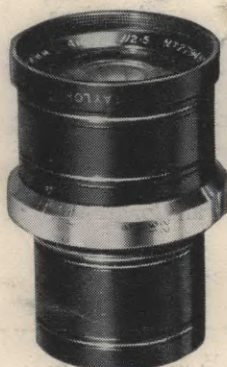


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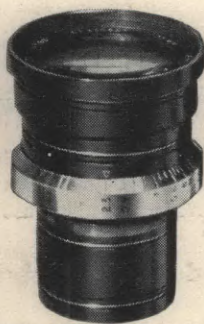
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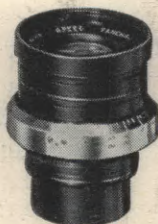
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